

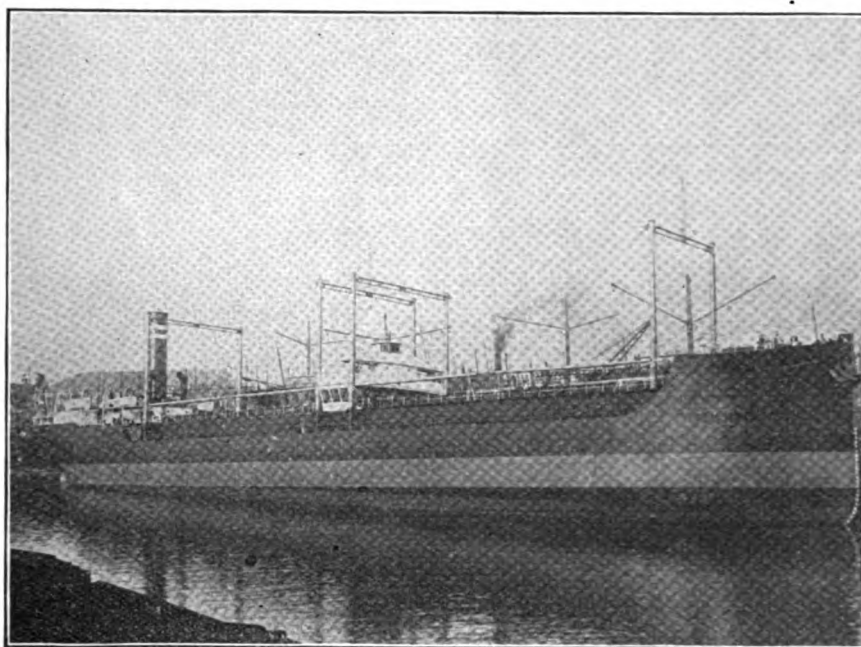
THE MARINE REVIEW

VOL. 37.

CLEVELAND, FEBRUARY 13, 1908.

NEW YORK

No. 7

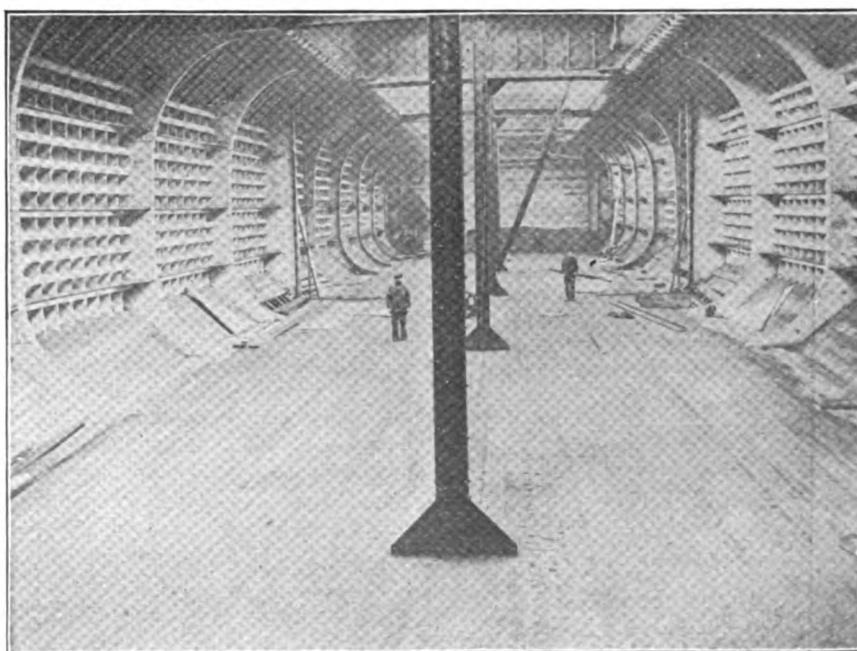


THE LATEST BRITISH TRUNK STEAMER.

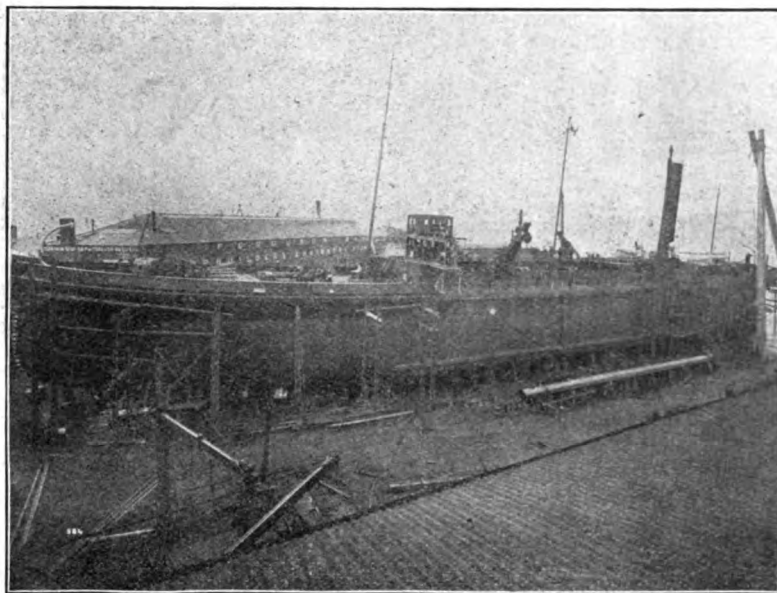
ble clear holds and hatches. This vessel has one hold only, 256 ft. long, and two hatches each 102 ft. long and 28 ft. wide. Her leading dimensions are 372 ft. by 52 ft. by 25 ft.; she will carry 7,550 tons deadweight loaded to her summer load line and she has a capacity of about 10,000 tons measurement. The captain and officers are housed in the poop, and the engineers in houses built on the poop. There is a chart house and navigating bridge built on a narrow platform spanning the hold amidships. She has over 2,000 tons of water ballast, 470 tons of which is situated above the main deck in the trunk ballast tanks, well above the center of gravity of the vessel, thus ensuring a steady ship and a good draft in ballast trim. She is a self-trimmer, and only such portable center line pillars are fitted as will be necessary to secure the shifting boards when

THE LATEST BRITISH BUILT PATENT "TRUNK" STEAMER.

Messrs. Ropner & Sons, Ltd., Stockton-on-Tees, have just built a novel vessel which is described as a patent "trunk" steamer. Of a craft which claims to be capable of carrying the largest quantity of deadweight with the least possible trouble, this is without doubt the best British example. She is a large trunk vessel, with one clear hold, and the engines are placed aft. The exterior of the vessel and her clear hold are shown by the accompanying illustrations which have been reproduced from photographs supplied by the builders. She has been built for Norwegian owners, and has been designed for the ocean coal carrying trade, although she is equally well adapted for deadweight or bulk cargoes. The tendency of the age is to build vessels with the largest possi-

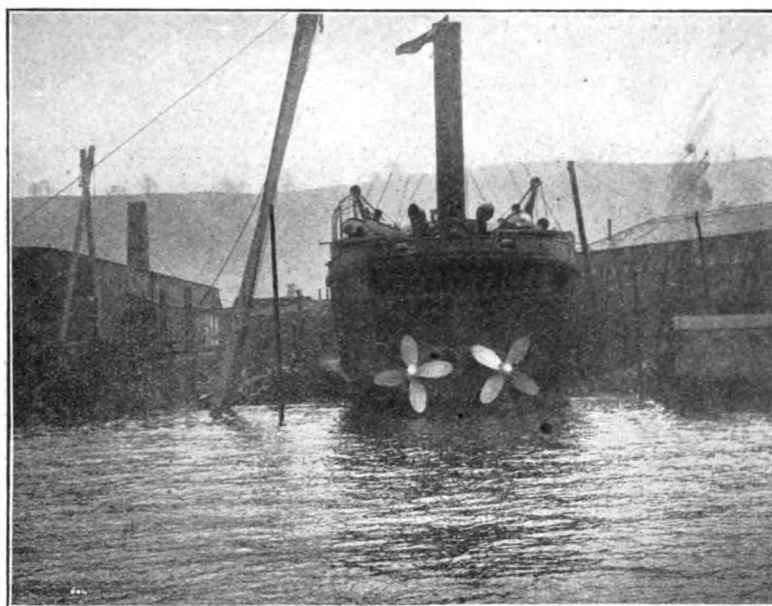


CARGO HOLD OF THE LATEST BRITISH TRUNK STEAMER.

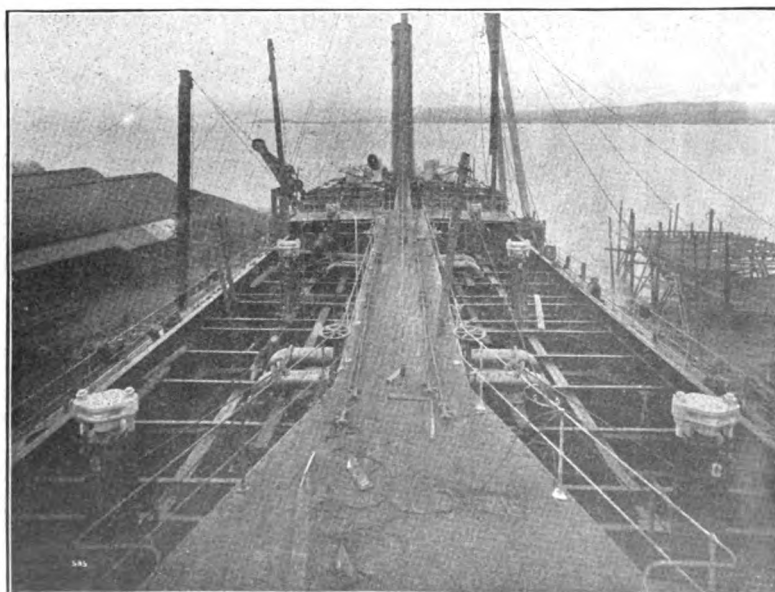


DREDGER LORD DESBOROUGH ON THE STOCKS.

these are required. There are no quarter line pillars. She is fitted with 8 large derrick masts, and 8 derricks with 9 steam winches to allow of expeditious loading and unloading of cargoes. The new trunk steamer is fitted with electric light, and also with fire extinguishing appliances to the hold. The ballast pumps, of which there are two, are capable of dealing with about 2,000 tons of water ballast in six hours when pumping the tanks up or pumping out. The engines of the triple expansion type are 26 x 42½ x 69½ by 42 in. and two boilers 16 ft. 9 in. by 11 ft. 6 in. at 180 lbs. pressure. The trial trip run during November was very satisfactory, a speed of 11 knots being obtained. The owners have expressed themselves as highly pleased with the vessel in every respect.



STERN VIEW OF THE DREDGER LORD DESBOROUGH.



DECK VIEW OF THE DREDGER LORD DESBOROUGH, LOOKING AFT.

THE LARGEST DREDGE BUILT ON THE CLYDE.

What is described as the largest dredge that has been built on the Clyde and also one of the largest dredging vessels afloat was launched on Nov. 9 by Messrs. Ferguson Bros. of Port Glasgow. She is a twin screw sand-pump hopper dredger, named Lord Desborough, and has been constructed for the Thames Conservancy Board, London. She is intended to work on the Leigh Middle shoal in the Thames estuary, through which a channel will be formed 1,000 ft. wide and 30 ft. deep at low water, this being part of the conservators' scheme for providing a channel of that width and depth from the Nore to Gravesend. It is calculated that it will be necessary to remove at least 6,000,000 cubic yards of

material from the shoal to obtain a channel of the dimensions named. For such purposes the Lord Desborough is admirably suited. She is 330 ft. by 54 ft. 6 in. by 23 ft. She is fitted with double suction pipes arranged to ship inboard, and is capable of raising 4,500 tons of sand per hour from a depth of 70 ft. below water level. The navigating and pipe maneuvering bridges are placed forward of the hopper, and an accommodation gangway leads from the lower bridge to the engine casing. On this gangway the gearing for working lander doors, wash out valves, and hopper valves is arranged. The propelling and pumping engines which have been constructed by the builders are of the triple expansion type, having a working pressure of 180 lbs. and steam supplied by three mul-

titubular boilers, each 15 ft. in diameter. The vessel has, as auxiliaries, three sets of Weir's pumps and a Weir's evaporator and feed heater, four Gwynne's centrifugals; Kirkcaldy's distiller and pump, and a separate duplex for water supply to sand pumps. The pipe maneuvering winches are of massive design, each having four barrels and weighing about 20 tons. Messrs. Ferguson Bros. have a very high reputation for the building of dredges, and the latest and largest dredges at work on the Thames, the Clyde and the Mersey are the output of this ship building yard.

REPORT OF STEAMBOAT INSPECTION SERVICE.

According to the annual report of the supervising inspector general of the steamboat inspection service the number of all classes of vessels inspected during the fiscal year shows a decrease from the previous fiscal year of 443 in number, but an increased tonnage of 147,626, which is due to the large vessels that have been constructed taking the places of the smaller vessels that have gone out of commission.

Of the total number of 8,262 vessels inspected, 419 were foreign passenger steamers with a tonnage of 2,423,304, a decrease from the previous fiscal year of two in number and 13,462 in tonnage.

The number of domestic steamers inspected and certified was 7,539, with a tonnage of 4,193,709, a decrease from the previous fiscal year of 364 in number and an increase of 182,549 in tonnage; 39 sail vessels and barges with a tonnage of 20,376 were inspected, a decrease from the previous year of 22 in number and 20,817 in tonnage.

Of motor vessels there were inspected and certified 265, with a tonnage of 15,482, a decrease from the previous fiscal year of 55 in number and 644 in tonnage.

Of all classes of vessels inspected, the Pacific coast has an increase over the previous year of 53 in number and 76,276 in tonnage, the Atlantic coast a decrease of 248 in number and 94,110 in tonnage, the western rivers a decrease of 105 in number and 2,964 in tonnage, the northern or great lakes a decrease of 130 in number and an increase of 123,954 in tonnage, and the Gulf coast a decrease of 13 in number and an increase of 44,470 in tonnage.

During the year ended June 30, 1907, 5,824 marine boiler plates were tested at mills by assistant inspectors of the service, under the act of congress approved Jan. 22, 1894. Of this number, 4,751 were accepted and 1,073 rejected.



THE GREAT HOLE IN THE COLLIER IDA'S HULL.
For description see MARINE REVIEW, Feb. 6, page 23.

RECEIVERSHIP FOR MORSE LINES.

The protective committee of the bond holders of the Consolidated Steamship lines, the \$60,000,000 corporation organized a year ago by C. W. Morse, and which took over six of the principal coastwise steamship lines, has applied in Maine, in Boston and in New York, for the appointment of a receiver for the holding company and two of its subsidiaries, the Metropolitan and the Eastern Steamship companies. The receivership proceedings were decided upon at a recent meeting of the committee owing to the fact that the Metropolitan and Eastern Steamship companies, which were the original Morse lines, were heavily in debt for the construction of new steamships and have been closely pressed by creditors. It was to anticipate possible action by them that the receivership was decided upon. The holding company was involved in the matter through its indorsement of the notes of its subsidiaries.

NEW ITALIAN STEAMER.

The steamship Ancona, building for the Steam Navigation Co. Italia, of Genoa, was launched from the yard of Workman, Clark & Co., Belfast, last week. The Ancona is 500 ft. long, 37 ft. deep and 60 ft. beam and has been especially designed for passenger service between Genoa, Naples and New York. She will have accommodations for 125 first-class and 2,500 steerage passengers. The Ancona's machinery consists of two sets of quadruple expansion engines having all the latest improvements, supplied with steam from three multi-tubular cylindrical double-ended boilers, working under the Howden system of forced draft. She is to have a speed of 17 knots.

The Metropolitan Steamship Co., will resume its daily passenger service between New York and Boston on April 1, when the turbine steamships Harvard and Yale will be placed back on route.

MODERN TENDENCIES IN SHIP BUILDING.

BY J. FOSTER KING, CHIEF SURVEYOR,
BRITISH CORPORATION REGISTRY.*

The tendencies of modern ship construction as seen through the spectacles of a classification society can, of course, only be judged from what passes before the observer's field of vision, but when it is considered that one of these modern tendencies is to invite assistance and co-operation from such societies in connection with the building of practically every type of commercial vessel, from a half-penny ferry steamer to an Atlantic liner, it is clear that there is no lack of evidence. As the art of building ships is so ancient that its beginnings are lost in the mists of the ages—the Egyptians were recording their skill as craftsmen some 7,000 years ago—the whole epoch, which commenced a century ago with the application of steam and manufactured iron, must be defined as "modern;" but as the changes and developments in that century have been greater than in the preceding thousands of years, it will at least be convenient to consider the word "modern" as relative to the events of the past 15 years or so. It is possible that in the history of naval architecture to be studied by contemporaries of Macauley's *New Zealander*, the story of the past hundred years may be dismissed in a single chapter, but it is to be expected that at least a subsection of that chapter will be annotated—"1890, the British Corporation Classification Society was founded in Glasgow, Britain, and in 1892 commenced active operations as a Registry." Whether due to that fact or merely accidental, there is evidence that the dates coincide with the beginning of such an acceleration in the remarkable progress which has distinguished the art of ship building since the introduction of iron and steel as to mark a distinct period.

INFLUENCE OF THE GREAT EASTERN.

The methods of the ship carpenter have been effaced from the construction of metal ships to a wonderful extent, considering that for years wood and iron building were carried on side by side, and that even now there are men in leading positions who were bred to handle the adze and saw instead of the punching and shearing machine. It must be admitted, however, that these influences have had a restrictive effect upon methods and design, and, while there has been a more rapid emancipation during the "modern" period, they have, consciously or unconsciously, produced hab-

its of thought which still delay the practical application of sound principles to the design of ship-shaped structures of steel. It is true that Brunel and Scott Russell cut themselves adrift from all precedents, and got down to the bed rock of first principles when they designed and built the *Great Eastern* as a floating girder 50 years ago; but the departure was too abrupt, the difference too huge to be assimilated by their contemporaries, while the commercial failure was so great as to cloud the views of their successors. But it is indisputable that the building of the *Great Eastern* accelerated the development of large steamers as nothing else could have done. It is only necessary to conceive the moral influence of the concrete realization of a 680-ft. ship upon designers of a day when 250 ft. was a very great length, to see that it must have been so. Within very recent times we have become accustomed to ships larger than the *Great Eastern*, but while they show great advances in other directions, can it be said that in structural design they are superior or even equal to Brunel's miracle—a creation of thought untrammelled by ship yard environment? The whole structural development of the large mail and passenger steamer, however, is epitomized, and may be better studied in the comparison of the sections of the *Great Eastern* and *Lusitania*, which has recently appeared in so many technical papers, than in words.

DEVELOPMENTS IN COASTING STEAMERS.

The coasting and cross-channel steamer is a familiar sight to dwellers on Clydeside, and in size, arrangement, and structure, no type of ship has shown less apparent variation during many years. This is probably explained by the fact that their trade requirements have not varied so much in character as quantity, and that they were naturally the first steamers to be developed and specialized. All the same, there has been a distinct advance in the internal economy of these vessels in recent years, in the direction of removing obstructions in the holds, such as deep keelsons and side stringers, while special arrangements have been made so as to dispense with stanchions or pillars in the way of the hatchways, and every feasible request of owners for the provision of those facilities in that rapid handling of cargo, which are so essential to "short-run" ships, have been so rapidly met by the registries that within the last year or two the tendencies following thereupon have reached what may be regarded as their final expression in the *Princess Dagmar* and *Princess Helena*. In these steamers there are no stanchions whatever and no webs or other structural obstructions in holds or 'tween decks,

and they are doing their work most successfully for their owners, Messrs. M. Langlands & Sons. Such improvements have also been carried out in the general design of the hulls of vessels of this type that the owner is now able, not only to handle his cargoes more rapidly and cheaply, but to carry them more safely and more free from damage than in those steel hulls which in former years were commonly built of iron thick-nesses in order to provide sufficient strength.

The direct expansion of the coasting, passenger and cargo steamer is the large passenger and mail steamer, but it is necessary to add to what has been written, because we are more or less familiar with its present highest development. In that type the need for numerous passenger decks and other conditions of design involve a certain fixity in structural arrangement, but it is probable that the future will show a greater tendency towards disobeying the laws of habit, a broader view of the essential principles of design, and a greater reluctance to waste material on decks and other parts which are removed to a distance from the top, bottom or sides of the hull girder.

THE COMING OF THE TURRET.

The year 1892 is also remarkable because of the building of the steamship *Turret*, the first of a well-known type which is distinguished by its complete departure, internally and externally, from pre-existing standards for the design of sea-going cargo steamships. The upper part is rounded in and squeezed up until a cross section looks like the profile of a wide-necked flat bottle—the neck being the turret. Turret ships have no sheer, and the central turret erection makes them "self-trimmers," while the disposition of the material therein provides great natural stiffness to resist both vertical and horizontal bending stresses, with a corresponding economy of material. They are usually built with no deck below the turret deck, the ship being kept in shape at intervals of about 27 ft., by an open framework, consisting of two vertical and two horizontal members, so that if the continuation from the rounded base of the turret to the round-over of the side plating, usually called the harbor deck, be defined as part of the shell structure, they are essentially single-deck ships. Their internal structure has recently been developed in the direction of leaving the holds free from the obstruction of the cross beams, and in evolving ingenious combinations which have been getting nearer to the principle that the most economical disposition of material in a box-shaped girder, such as a ship, should be that

*From the *Glasgow Herald*.

which places it chiefly on the external walls. In view of the fact that Messrs. Doxford have now built 174 turrets, representing 663,701 tons, had the world been richer today by the presence of the late chief surveyor of Lloyds Register, Mr. Martell would probably have admitted the danger of prophecy, when it is recalled that he said in 1892 that he was unable to approve of this modern type of ship for general ocean cargo-carrying purposes, and indicated his opinion that the type would prove to be dangerous.

SIMPLIFICATION OF DECKS.

Undoubtedly, the turret steamer, by its success, was an important contributory cause to that waking-up effect upon builders and owners, that initiation of so many departures from accepted design, and that loosening of the fetters of habit forged by the builders of our wooden walls, for which the past 15 years have been distinguished. For example, take the change in view which has taken place as to the number of decks required in a cargo steamer. In a general trader, of any great size a deck below the upper deck is obviously a desirable thing for dividing cargo, providing cattle accommodation, and so on; but in a steamer intended chiefly for the carriage of timber, grain, coal and other bulk cargoes such a deck seriously obstructs the handling of timber and self-trimming cargoes. Yet, chiefly for the reason that the necessities of wood ship construction created the habit of thinking of a 15-ft. hold as a maximum, the old-time two-decker and three-decker has had a distinct and almost immovable place in nomenclature and in steel construction. The processes of time had many years ago so far modified tradition that wide-spaced, strong beams were often fitted in place of the lowest deck. The later demands of timber traders and others had caused the practical realization of the idea that these hold beams might be left out if the strength of the framing at the ship's side was increased; but the possibility of interfering with the second deck in a so-called three-decker was scarcely contemplated 15 years ago. It is only 10 years since the jump from 23½ to 26½ ft. depth, in vessels with only one deck, was made in the steamer *Lincluden*, built by Messrs. Furness, Withy & Co. Nowadays pure single deckers of 28 ft. depth are becoming a matter of course, and should the trade conditions demand the adoption of still greater depths the limitations imposed would be those of available sections of material and of ship builders' facilities rather than those of structural design or classification rules. A similar development has taken place in the simplification of large vessels in which the

depth is so great that sub-division is necessary in order to render possible the carriage of general cargo in the holds, so that we have now running out of Glasgow such steamers as the *City of London*, having depths so great that, in quite recent days, they would have been regarded as impossible with less than two, if not three, 'tween-decks and a tier of hold beams. They are actually constructed with only one 'tween-deck space, 11 feet in height, and no beams below the second deck.

UNSCIENTIFIC METHODS.

In wood ships it was the practice to place the heaviest material below the level of the main deck, and this fact, together with the retention of the name "Main," as applying to some deck below the upper deck, has had an effect upon iron and steel ship building so surprising and so contrary to the dictates of accepted knowledge as to suggest the idea that hypnotic suggestion has its influence upon the applied arts. The habits of thought and action thus created have placed an even more powerful brake upon the wheels of progress towards proper disposition of longitudinal material than towards simplification of decks. Without going back so far as the days of Scott Russel, it is 30 years since Mr. John's historic paper familiarized ship builders with the girder theory of ship construction, a theory which has stood unassailed ever since. It has been confirmed again and again by experience, and in the minds of most naval architects it stands as a piece of absolute knowledge that the hull of a ship is a floating girder, and subject to the laws which govern girder design. Notwithstanding all that, bad disposition of material is even yet adopted or accepted in many cases without protest by constructors who would never dream of wasting 1 sq. in. which they could see their way to avoid in the design of any other kind of girder, and the subtle suggestion which remains from that which was done before, seems to make it difficult for them to escape from the feeling that it is natural to dispose heavy material about a main or some other deck which is not the top of the girder. Even in some classification rules provisions can still be found which are directly contrary to scientific facts, and which diverge therefrom to the extent of indicating that it does not matter whether a steel deck be placed on the top of the girder or 8 ft. below it. In spite of such things as these there have been such developments during the past 15 years as in some measure justify an assertion that the tendency of structural design has been to move towards a more universal application of scientific knowledge. So much

has been done in the way of redistribution of material towards the top of the structure and away from lower levels, so much success has attended the practical recognition in this way of the fact that the sea does not concern itself about the name which is given to the top of a girder, but places major stresses upon upper, spar, awning and shelter decks with equal equanimity, and it is so commonly known that the base of an erection is not the proper place for a doubling plate, that it is to be hoped the leaven which has already done so much will ultimately leaven the whole lump, and that still more improved methods will characterize the disposition of the longitudinal material in all future ships.

Then the counterpart of the heavy timber keelsons of wood ships, which used to find expression in tremendous H girders of plate and angles built on the top of the floor plates, have almost disappeared with the general adoption of the double bottom, but this unscientific and unpractical use of steel manifested itself until very recently in the habit of fitting very heavy and often deep stringers on the side framing in the holds. It was an opinion, if not a superstition, 15 years ago, that these excrescences had particular longitudinal value, and, curiously enough, that they also had general transverse value. In fact, it then stood, and still stands, among some of the regulations for the construction of steel ships that a 40 or 50-in. orlop stringer is regarded as a contribution to the general strength of side framing, although unsupported by beams or web frames. In 1901, Dr. Bruhn read a paper in Glasgow, which touched upon this point, and in the discussion it was pointed out to him that, as it was physically impossible for such a stringer to be deep enough or stiff enough to stand rigidly between one bulkhead and another in an ordinary hold, it was, therefore, equally impossible that it could afford any contribution to the general strength of the transverse framing. Since then this apparently obvious point of view has taken root everywhere, and in practice we may look in vain in modern steamers for any stringer of the character described standing inside the frames. Side stringers are now of the relatively minute dimensions which suffice for their simple and proper function of combining the shell plating with the framing, and ship owners have thus been saved a great amount of weight, cost and unnecessary obstruction in the holds of their vessels. So complete is the change that four large vessels have already been built on the Clyde, and have done successful work, in which there are no side stringers of any kind, and the weight of the material thus saved has

been used to give greater stiffness of side framing and strength of shell plating. These ships are being followed by others, and builders now regard it as a commonplace to utilize the weight of one or more of the modern small side stringers more economically and effectually in the general structure of the hull.

It may already appear incredible, but 15 years ago the dimensions of deck beams were not usually considered in relation to the number of pillars or stanchions which supported them, nor were the sizes of pillars made in proportion to their length and the weight they had to carry. In common practice beams of uniform size were often supported alternately by three stanchions and one stanchion, all of the same diameter. The committee of the British corporation registry were the first to issue regulations in which there was an adjustment of the dimensions of beams and stanchions to actual conditions, and some years after their example was generally followed, with results distinctly to the advantage of all owners of classed vessels. The Turret and the example of Alfred Holt, of Liverpool, assisted a revolt against the normal arrangement of close-spaced round stanchions under decks in ordinary steamers, with the result that it is now quite common to see vessels with say only four built stanchions in each hold in association with girders supporting the decks, or with no stanchions at all, in special types such as Harroway and Dixon's side tank steamer, while the arrangements which captains and stevedores so disrespectfully describe as "forests of stanchions" are already old-fashioned.

THE QUESTION OF SUB-DIVISION.

A great change of opinion is also becoming apparent in connection with the important question of the sub-division of cargo steamers by means of watertight bulkheads. It is easy to understand how it came that a matter which should have nothing to do with structural efficiency crept into the regulations of classification societies. The necessity for separating cargo spaces from the machinery space by iron bulkheads is obvious and the rendering of them watertight natural. The protective value of a collision bulkhead is so great that no owner would think of building a metal ship of any kind, and almost at any time, without adopting this protection to his property. The introduction of screw propulsion carried with it the need for a watertight bulkhead to shut off the shaft tube from the hull, so that it is now many years since bulkheads became acclimatized on steamers and registries became accustomed to the

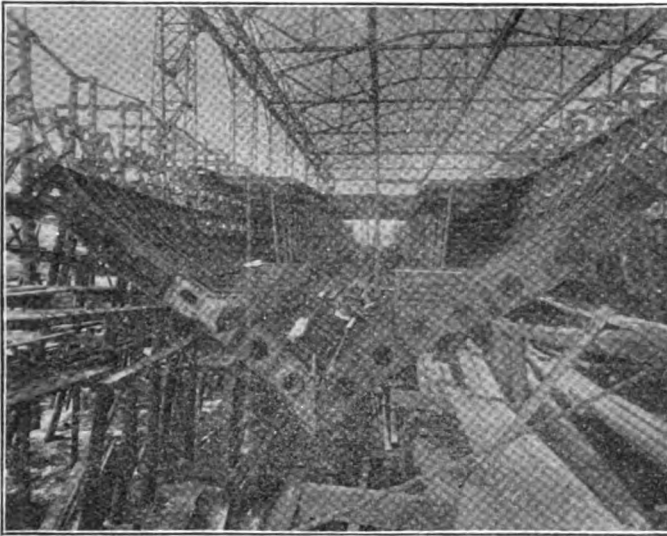
idea that it was within their province to issue regulations relating to sub-division. The principle which has been adopted is apparently that of money value, i. e., the larger the steamer the smaller the sub-division; but at the same time and under the same classification, the more helpless sailing vessel has never been required to have more protection than is afforded by a collision bulkhead. The exhaustive report of the bulkhead committee of 1890 brought home to naval architects, and possibly to ship owners, that to sub-divide a hull to an extent which would enable it to have a reasonable chance of remaining afloat with any one compartment pierced means sub-division so minute as to be possible only in high-class passenger steamers. It was also seen more clearly that equally effective sub-division means an equal number of compartments in similar steamers of all lengths, but practical limitations as to necessary length of hold renders it impracticable to apply this law to all cargo steamers. The British Corporation did attempt to improve slightly upon the previous position by requiring, in steamers of certain lengths, that the bulkheads to be placed between the peaks and machinery space are to be so situated that if a compartment next to a peak be holed there is a reasonable hope of the vessel remaining afloat, but this does not remedy the possibility that the cargoes carried may be of such density that no commercial degree of sub-division in a steamer would be of much value. Apart from the question whether registry societies would all extend their control from that of strength and fitness to carry cargoes safely over the seas to that of guarding against the results of collisions and strandings, it must be admitted that the present position is too inconsistent to be maintained, and its practical value has been so far gaged in recent years that ship owners are no longer prepared to sacrifice the suitability of their steamers for special trades to the dubious safety to be obtained from bulkheads, and modifications to meet their requirements have been granted by the registries.

THE NEWEST DESIGNS.

It is impossible within the limits of this article to touch upon the many different designs which have been evolved in recent years, such as Messrs. Harroway and Dixon's "cantilever" ship, in which a triangular corner of the topsides is cut off for water ballast; Mr. McGlashan's

"double-skin" ship; Mr. Isherwood's longitudinally stiffened hull, or Mr. Burrell's "straight-back" steamer, but it may be desirable to conclude with a reference to the steamer Thor, about 7,500 tons d. w., built in 1907 by Messrs. Ropner, of Stockton, for Mr. Wilhelmsen, of Tonsberg, and classed with the British corporation. This vessel may reasonably be regarded as embodying more of the "modern" spirit of design than any other ship now afloat. She is built on Messrs. Ropner's trunk principle (which may be described as a turret without the rounded base to the turret or the round-over at the junction of the harbor deck and side plating which are peculiar to Messrs. Doxford's turret design), but in this case the trunk has two walls on each side. Between these are carried nearly 500 tons of water. The engines are aft; there are no bulkheads between the machinery space and the forepeak; there are two hatchways, each over 100 ft. in length and 28 ft. in width, and the top structure is supported by strong webs in the holds, to the practical exclusion of cross ties and stanchions. It may be of interest to know that this ship's first voyage was to Newport News in ballast, and although severely tested by tempestuous weather she arrived in perfect condition.

To summarize the tendencies of modern ship construction; possibly the first is the chief source and cause of all others, and that is the tendency of the classification societies to take a broader view of their position and duties. While adhering rigidly to their first duty of endeavoring to ensure strength, efficiency, and the highest quality of workmanship in the vessels constructed under their supervision (and of all that are built these are by far the largest number) they do not always regard their rules as final either in conception or administration. They now seek rather to aid and develop structural designs in new and better directions than to hamper them by unwillingness to depart from well-tried, because older methods. Above all, they are now realizing that many of their rules have been founded upon obsolete practice, that "compensation" for the absence of that which is initially unnecessary is the wrong word to use, and that improved design may include reduced weight. Aided by this liberal spirit, the ship builder has advanced rapidly during recent years in the direction of simplification of the hull structure, through reduction of the number of



NORTH DAKOTA ON FEB. 3—LOOKING AFT.



BATTLESHIP NORTH DAKOTA, FEB. 3—SHELL PLATING.

its parts, while the ship owner has greater freedom in providing for the requirements of trade, and is coming closer to his ideal of decks all hatchways, holds all cargo space, and hulls better qualified than ever before to carry dry and perishable cargoes to all parts of the world.

concern, associating with him his brothers, Daniel and John. All three are now dead. The present company is composed of Ed. J. Howard, president and manager; J. E. Howard, vice president and buyer, and Clyde Howard, secretary and treasurer. The

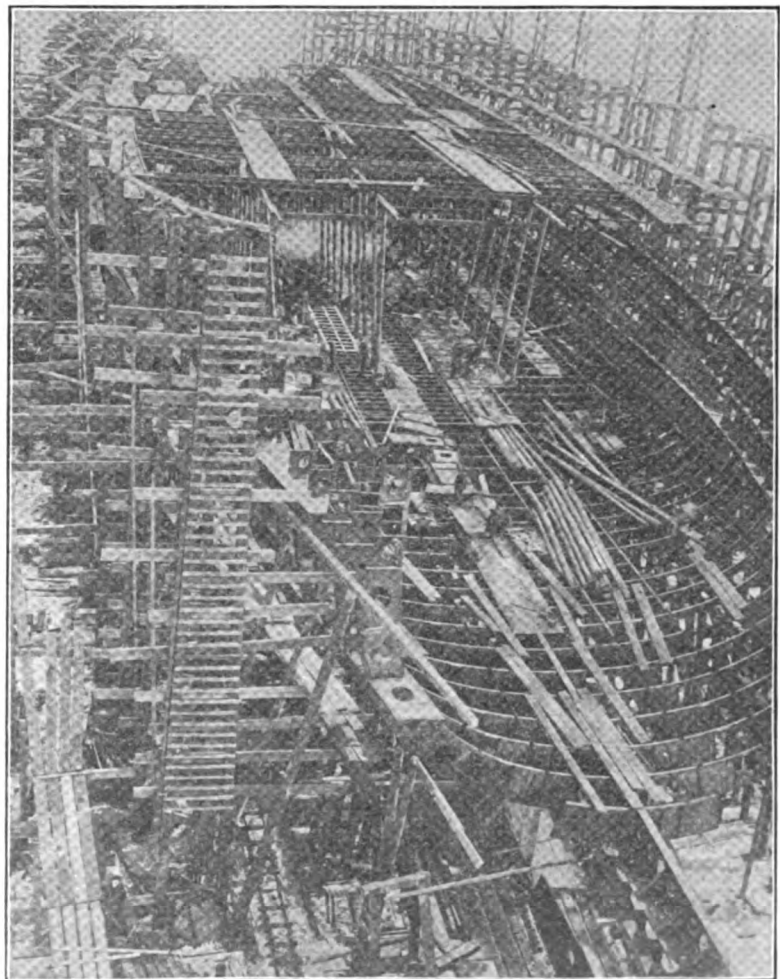
company builds everything in the line of river craft, and have latterly added a motor boat department to their works. In addition to the yard at Jeffersonville, the Howards also have a ship yard at Madison, Cincinnati, Paducah and near St. Louis.

BATTLESHIP NORTH DAKOTA.

Herewith are published three photographs showing the state of work on the battleship North Dakota on Feb. 3. One shows the framing from the bow, one the framing from the stern, and the third the shell plating taken underneath. The work during the week ending Feb. 3 was somewhat delayed by severe weather and two bad storms which prevented the workmen from working altogether. A number of additional shell plates were fitted and considerable riveting done. The work in the steel mill continued about as usual, and a large amount of material was put through ready for erection on the ship.

HOWARDS'S SHIP YARD.

The *Louisville Times* recently issued a special edition devoted to the industries of Louisville and contiguous territory. It is observed that the Howard's Ship Yard Co. has the leading place in the issue. This yard is at Jeffersonville, Ind. This company is one of the oldest in the United States, having been continuously in business for 71 years, during which time more than 900 vessels have been constructed at its yards. The company was established by James Howard, father of the present head of the



NORTH DAKOTA, FEB. 3—LOOKING FORWARD.



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Published every Thursday by

The Penton Publishing Co.
CLEVELAND.

BOSTON.....1053 Exchange Bldg.
BUFFALO.....932 Ellicott Sq.
CHICAGO.....1362 Monadnock Bldg.
CINCINNATI.....First National Bank Bldg.
NEW YORK.....1005 West Street Bldg.
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publication.

The Cleveland News Co. will supply the trade
with the MARINE REVIEW through the
regular channels of the American
News Co.

European Agents, The International News
Company, Breams Building, Chancery
Lane, London, E. C., England.

Entered at the Post Office at Cleveland, Ohio,
as Second Class Matter.

February 13, 1908.

PHILIPPINE AND COASTWISE TRADE.

The special report of Secretary of War Wm. H. Taft to the president on the Philippines has just been issued. He has touched upon every point completely but what interests us most are his views upon the extension of the coasting laws of the United States to embrace the Philippines. He states that it will be unwise to do so until a reasonable subsidy is voted to American vessels engaged in that trade. In other words, congress should remove the handicaps that it has imposed upon shipping. No matter where the American ship turns for trade it meets with the eternal handicap of higher cost of construction and higher cost of operation. Secretary Taft says:

"It is proposed by some to put in force the coastwise trading laws in respect to the navigation between the United States and the islands. I think

this a very short-sighted policy. Today the trade between the United States and the islands, export and import, is about 28 per cent of the total. The proportion of the total export trade from the Philippines to the United States is growing and is certain to grow more rapidly in the future, especially if proper legislation is adopted in respect to sugar and tobacco. Now a coastwise trading law will exclude altogether the use of foreign bottoms between the ports of the United States and the ports of the Philippine Islands, and will confine that commerce to United States vessels. There is very grave doubt whether there are enough United States vessels to carry on this trade as it is, and even if there were they could not carry on the trade without a very great increase in freight rates over what they now are. The minute that these rates are advanced, while the rates to other countries remain the same, the trade between the island and the United States will cease to be. There will be no trade for the vessels of the United States to carry, no one will have benefited in the United States, and the only person who will reap advantage is the foreign exporter, to whom the Philippine business house will naturally turn for exchange of products. The only method possible by which the United States vessels can be given the Philippine trade is by voting a reasonable subsidy for United States vessels engaged in that trade. Any other prohibitive or exclusive provision of law will be merely cutting off the nose to spite the face of the interest which attempts it. I feel certain that when the question of applying the coastwise trading laws to the business between the United States and the islands is fully investigated, even those representing the shipping interests that need and ought to have much encouragement will conclude that the coastwise trading laws applied to the American Philippine trade would merely destroy the trade without benefiting the shipping interests.

"In the criticisms upon the government's Philippine policy to be found

in the columns of the newspapers that favor immediate separation, it has been frequently said that the coastwise trading laws of the United States apply as between islands of the Philippines. The truth is that the restrictions upon shipping between ports in the Philippine islands are what the legislature of the islands imposes, and congress has made no provision of limitation in respect to them. The coastwise regulations in force within the Archipelago are as liberal as possible."

CANADA RESERVING ITS COASTWISE TRADE.

By an act of the council of the dominion government issued on Jan. 13 last, the Canadian coasting privilege will after Jan. 1, 1909, be taken away from the nations now enjoying them. While this order does not affect American vessels it is an indication of the adoption of the general American coasting policy in the dominion. The change will especially affect the Norwegian vessels which at present are extensively employed during the summer months in transporting coal from the maritime provinces to Montreal. The order just issued reads as follows:

"The Governor General in Council is pleased to order that the Orders in Council hereinafter cited, admitting ships or vessels of the following countries to the Coasting trade of the Dominion of Canada on the same terms and conditions as are applicable to Canadian vessels, viz:—

"As to Italy, Order of Council 13th August, 1873; as to Germany, Order in Council 14th May, 1874; as to the Netherlands, Order in Council 11th October, 1874; as to Sweden and Norway, Order in Council 5th November, 1874; as to Austro-Hungary, Order in Council 1st June, 1876; as to Denmark, Order in Council 25th January, 1877; as to Belgium, Order in Council 30th September, 1879; and as to the Argentine Republic, Order in Council 18th May, 1881: shall be and the same are hereby repealed, on, from and after 1st January, 1909; and that the exemption existing under the Orders in Council hereby repealed, shall cease

to apply to the ships and vessels of Italy, Germany, The Netherlands, Sweden and Norway, Austro-Hungary, Denmark, Belgium, and the Argentine Republic, on, from and after the 1st January, 1909; and that the ships and vessels of each of the said Countries, on, from and after the said date shall be subject to the terms of Section 955 of Chapter 113 of the Revised Statutes of Canada, 1906, which provides that no goods or passengers shall be carried by water from one port of Canada to another, except in British ships."

Section 955 of chapter 113 of the revised statutes of Canada, 1907, referred to in the Order of Council reads as follows:

"No goods or passengers shall be carried by water, from port of Canada to another, except in British ships.

"If any goods or passengers are so carried, contrary to this Part, the master of the ship or vessel so carrying them shall incur a penalty of four hundred dollars; and any goods so carried shall be forfeited, as smuggled.

"Such ship or vessel may be detained by the Collector of Customs at any port or place to which such goods or passengers are brought, until such penalty is paid, or security for the payment thereof given to his satisfaction, and until such goods are delivered up to him, to be dealt with as goods forfeited under the provisions of the Customs Act."

ORE PRICES REAFFIRMED.

An important meeting of the Lake Superior iron ore interests was held in the office of the Cleveland-Cliffs Iron Co. on Friday last when it was decided to reaffirm the old prices for ore, that is to say, \$5 for old range Bessemer, \$4.75 for Mesaba Bessemer, \$4.20 for old range non-Bessemer and \$4 for Mesaba non-Bessemer. Various factors operated to bring about this condition, notably the reluctance to reduce wages in the mining district, the increase in taxation of ore properties and the natural desire to prevent losses to consumers on ore already purchased but not consumed through banking furnaces owing to the demoralized state of the iron market. Moreover a lessened price on ore

would not at this time have mended matters in any way because buying would not have been stimulated nor production increased. Everyone has an abundance of ore and the sensible thing to do is to let it lie in the ground where it cannot depreciate but must inevitably enhance in value. The lake season will probably not open until late, not until well into May and probably June 1st, the present estimates of the ore movement being 25,000,000 tons, which would be 17,000,000 tons less than last year. Probably, however, 30,000,000 tons will be nearer the mark. There has been no buying of ore as yet nor is any buying expected in the immediate future.

The movement of ore from docks to furnaces is about 25 per cent of the tonnage moved at this time last year. Pig iron manufacturers, at the Cleveland meeting the day following the ore conference, favored maintaining the basis of \$17 valley for No. 2 foundry. It is probable, however, that the schedule of prices will be readjusted so as to permit certain furnace interests to absorb freight charges. Since southern iron is being sold freely at \$12.50 Birmingham, with \$12 possible for prompt shipment, the southern situation is weak. In general, no immediate effect, of course, has been felt from the Gary movement among the big steel and iron interests; still, conditions are no worse, and, in several respects, are better than they were a few weeks ago. It is difficult to predict at this early date what the ultimate effect of these meetings will be.

The bar iron business shows some improvement. Railroads are placing fairly large orders for the coming season. The Pennsylvania Steel Co., the National Tube Co., at Lorain, and the South Works of the Illinois Steel Co., were started in part this week, and an extremely gradual improvement in the general market is noted.

The coke market is quiet, and furnaces show no disposition to contract.

JANUARY LAKE LEVELS.

The United States Lake Survey reports the stages of the great lakes for the month of January as follows:

Lakes.	Feet above tide-water, New York.
Superior	602.10
Michigan-Huron	580.42
Erie	572.52
Ontario	246.73

Since last month Lake Superior has fallen nearly $5\frac{1}{2}$ in., Lakes Michigan and Huron have fallen 2 in., while Lake Erie has risen $3\frac{1}{2}$ in. and Lake Ontario $5\frac{1}{2}$ in. In the next month

Lake Superior is likely to fall $2\frac{1}{2}$ in.; Lakes Michigan, Huron, and Erie should hold their January level; Lake Ontario should show a rise of an inch or more.

Lake Superior is 1 ft. above its January level in 1893, and 4 in. higher than in 1890; but it is $1\frac{1}{2}$ in. lower than January last year, over 7 in. lower than in 1905, and $3\frac{1}{4}$ below the mean January stage for the past ten years.

Lakes Michigan and Huron are 16 in. higher than in January, 1896, $6\frac{1}{2}$ in. higher than in 1904, and 5 in. above the mean January stage of the past 10 years; but they are lower by $2\frac{1}{2}$ in. than in January last year, and 27 in. lower than in 1886.

Lake Erie is $18\frac{3}{4}$ in. higher than in January, 1896, 7 in. higher than 1906, just 1 ft. higher than 1905, and $10\frac{1}{4}$ in. higher than the average January stage for the past 10 years; but it is lower by about 1 ft. than in 1886, and lower by $2\frac{1}{4}$ in. than in January last year.

Lake Ontario is nearly 3 ft. higher than in January, 1896, $3\frac{1}{2}$ in. higher than last year, and $18\frac{1}{2}$ in. higher than the average January stage of the past 10 years; but it is 10 in. lower than in January, 1886. Lake Ontario shows the highest January stage in 22 years. With heavy ice in the St. Lawrence river to check the outflow, the coming season should show exceptionally high water for this lake.

BOLAND & CORNELIUS APPOINTMENTS.

The following appointments of masters and engineers are announced of the fleet of vessels operated by Boland & Cornelius, Buffalo:

Steamer—	Captain—
Jacob T. Kopp	M. S. Peterson
John J. Boland	John O'Hagan
Adam E. Cornelius	Walter M. Brooks
Kensington	M. Christy
Yale	John Montgomery
Niagara	A. Forrest
Winnipeg	
Pridgeon	Hugh O'Hagan
Steamer—	Engineer—
Jacob T. Kopp	George Haig
John J. Boland	John Darcy
Adam E. Cornelius	Daniel Darcy
Kensington	Simon Mallen
Yale	Charles W. Holtz
Niagara	Norman Annes
Winnipeg	Joseph Hammet
Pridgeon	

PERSONAL.

Frank E. P. Uberroth, son of Capt. P. H. Uberroth, commanding the revenue cutter Tuscarora, has been nominated by the president a cadet at large to the military academy at West Point, but inasmuch as Mr. Uberroth is at present a midshipman at the naval academy he has declined the appointment tendered him.

IN LAKE SHIP YARDS.

The bulk freighter M. A. Bradley in 1893, being the latest edition to this fleet. Had Mr. Bradley followed

the practice of replacing his wooden vessels with steel ones and amplifying his fleet to meet the expansion of lake trade, he would today be the largest independent owner of vessel property on the lakes.

Owing to absence in the south, Mr. Bradley did not attend the launching of his namesake. She went overboard in very wild weather without even a sponsor. The new steamer is 482 ft. long over all, 460 ft. keel, 52 ft. beam and 30 ft. deep. She will be brought out by Capt. M. Mulholland.

This makes three launchings to the credit of the Great Lakes Engineering Works since the first of the year, the Burlington, Normania and Bradley, the Normania having been launched from the St. Clair yard on the preceding Wednesday in a forty-mile gale of wind accompanied by a blinding snow storm. In order to accomplish this tugs had to be sent to break the ice in the St. Clair river. Quite a number of spectators, including some hardy photographers, had gone out upon the ice beyond the yard to witness the launching. When the Normania went overboard they speedily discovered how it felt to have ice rock like the waves of the ocean. The swell was as though a line boat was passing, while the crunching and cracking and breaking of the solid field was anything but pleasant to those who stood on it.

The three berths at Ecorse are now occupied by construction work, one by a 10,000-ton steamer for the Frontier Steamship Co., W. M. Mills,



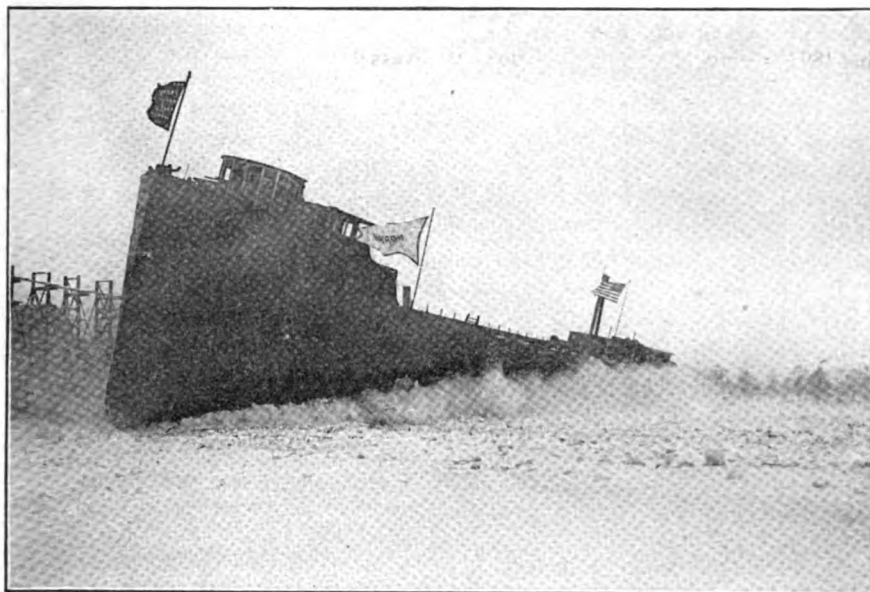
MR. M. A. BRADLEY.

of the Great Lakes Engineering Works on Friday last for the Alva Steamship Co. of Cleveland, and was named in honor of the prominent Cleveland vessel owner. There was a time not long past, when M. A. Bradley was the leading vessel owner on the lakes. His father, Alva Bradley, had been distinguished for many years in lake trade, occupying the foremost position among vessel owners. He was the first man to carry contract ore, making an agreement with the old Cleveland Iron Mining Co. to carry ore throughout the season at \$3 per ton. Alva Bradley was one of the noted characters of the lakes and many of the older generation are not through talking about him yet. His son, M. A., succeeded to his business but under the terms of his father's will was required to invest a certain portion of the estate in real property.

The present freighter is the first that has been built for the Bradley



LAUNCHING THE M. A. BRADLEY AT ECORSE.



LAUNCHING THE NORMANIA AT ST. CLAIR.

manager, and two 11,000-ton steamers for the Mutual Steamship Co., Davidson and Tomlinson interests. The first one to be launched will be one of the steamers building for the Mutual Steamship Co. This steamer is to be named in honor of Mr. Wm. Livingstone, president of the Lake Carriers' Association. At the St. Clair yard the Great Lakes Engineering Works have under construction Section No. 5 of the Detroit river tunnel and the steel is now being fabricated for a steamer to be an exact duplicate of the Normania, keel of which is now being laid. This steamer is building for the American Steamship Co., and is to be named in honor of Mr. Adam E. Cornelius of Buffalo.

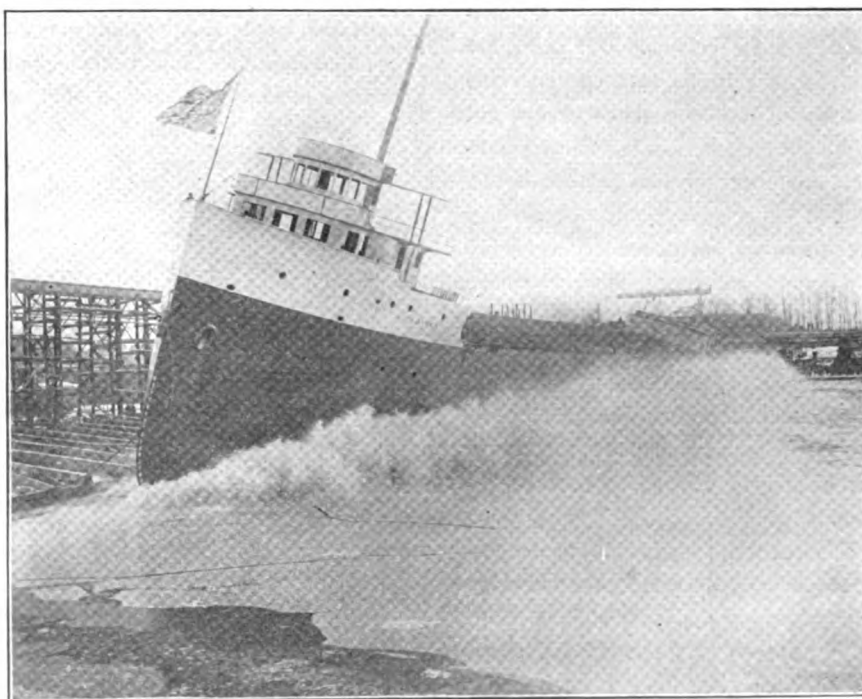
The bulk freighter J. J. H. Brown was launched from the Lorain yard of the American Ship Building Co. on Saturday last and was christened by Mrs. J. J. H. Brown of Buffalo in honor of her husband. Mrs. Brown performed her duties most satisfactorily. The launching party went to Lorain in special cars and at the conclusion of the launch returned to the Union Club, Cleveland, for luncheon. Mr. Harvey D. Goulder acted as toastmaster and the speech-making was of the most felicitous kind as Capt. Brown is one of the best-liked men on the lakes. Moreover his seventieth birthday occurred on the day following and occasion was taken to celebrate it in conjunction with the launching of the steamer.

President William Livingstone of the Lake Carriers' Association was unable through illness to be present. He therefore wrote a letter to Mr.

Goulder containing a touching tribute to Capt. Brown of which Mr. Goulder read in part as follows:

"Someone has said that 'A true friend is a golden link in the chain of life.' For over thirty years—I will not say how much more—Capt. Brown has been one of the golden links in my life and if the Lord made a squarer or truer man to his friends, I have neither found nor seen him. Some poet has said:

"Go seek for friends, you will soon find some
Who charm by being new,
But years must pass and sorrows come
Ere you can prove them true."



LAUNCHING THE J. J. H. BROWN AT LORAIN

and if that had been written for him they could not have better described him.

"The steamship company have honored themselves by naming this steamer after him and if the hearty wishes of his legions of friends around the lakes (and I know of no man who has more) for the success and prosperity of this boat on account of her name could be turned into flowers and thrown at his feet, there would be such a multitude of them that it would rise into a monument of roses. Whenever and wherever, at any port on the lakes, her burgee appears with the name of J. J. H. Brown, it will be hailed with more than passing pleasure. The 9th (Sunday), is his seventieth birthday and that he may see the century mark and have just clouds enough to make a glorious sunset is the earnest wish of all of us. Again trusting and hoping that the success and prosperity of the ship on account of her name may exceed the most sanguine hopes of her owners is my most earnest wish."

The Brown is building for the Brown Steamship Co., of Buffalo and is 452 ft. long over all, 432 ft. keel, 52 ft. beam and 28 ft. deep. Her engines are triple-expansion with cylinders 22, 35 and 58 in. diameters by 42 in. stroke, supplied with steam from Scotch boilers, 13 ft. 9 in. diameter by 11 ft. 6 in. long, equipped with Ellis & Eaves draft and allowed a pressure of 170 lbs. She will carry 8,000 gross tons. Capt. F. D. Chamberlain of Detroit will sail the Brown.

FOR THE LAKE MARINE

In this department hereafter will be found everything of current interest pertaining to Lake Navigation. Masters are advised to consult it weekly for information of interest to them; and owners are invited to use it freely for the promulgation of all announcements of a general nature. The Marine Review will be placed aboard every vessel having membership in the Lake Carriers' Association, representing a registered tonnage of nearly 2,000,000 tons, and can, therefore, be depended upon as a reliable courier to the entire fleet. It will reach every vessel in active service weekly. It is the intention to make this department complete so that at the end of the year it will be an authentic record which should prove of permanent and increasing value to owners and masters alike.

At the annual meeting of the Pittsburgh Steamship Co.'s captains held at the Hollenden on Jan. 2, Hermon A. Kelley, counsel, delivered an address to the masters which is of vital interest to all masters of vessels as it deals with the rules of the road and the interpretation of signals. Mr. Kelley naturally looked upon navigation from the standpoint of the owner's pocketbook as every error in navigation ends there. His address was as follows:

MR. KELLEY'S ADDRESS.

"Nearly every winter since 1896, Mr. Coulby has called upon me to meet with the masters of the fleet or fleets under his management. Each time I have felt like prefacing my talk with some kind of apology for presuming to suggest to experienced masters, rules of conduct concerning the navigation of their vessels. But there are many lessons to be learned from the statistics of a profession which might seldom be impressed upon the individual members of that profession by personal experience. Some of you may have been so fortunate as never to have had a collision. Such a record is certainly indicative of good seamanship; yet it would be unsafe to conclude that it furnishes immunity against accidents, or that it means necessarily that you have always strictly obeyed all the rules of navigation.

"On leaving a certain ore steamer some years ago, I remember wishing the captain good luck. He replied that it wasn't a matter of luck, and that he had never had an accident in his life. I am not superstitious, but it certainly was a most curious coin-

cidence that on his very next trip he ran into and sank a lumber barge at Bar Point, and had a serious collision with another steamer just above Belle Isle. Later on in the season he put his steamer aground. I hope these experiences didn't lead him to change his theory. He was right when he said it isn't a matter of luck. In the long run it is cautious and competent seamanship that will tell. A man may persistently violate certain rules of navigation for a number of years—he may escape accidents so long that he comes either to believe the rules to be useless or his luck to be collision proof—but sooner or later he is sure to contribute his full share to the history of litigation.

"It is for this reason, among others, that it may be well now and then to bring to his attention the kind of luck others have had with certain kinds of navigation. Sometimes actual experience is the only teacher, but in times like these, at least, she is too expensive for the average vessel owner. It is cheaper to use the experiences others have paid for. These latter are to be found in the records of the transportation companies, of law offices, and of the courts. So that, while I may not know how to handle a steamboat as well as you do, I have the advantage of least, of knowing a good deal about how boats have been mishandled. And I fully believe that the presentation to meetings like this, of the information and experiences thus collected, has in the past exercised a considerable influence in preventing expensive experiments in similar kinds of navigation.

"Last year your attention was called to the fact that there had been a large and significant decrease in the number of suction cases, following the decisive

action of Mr. Coulby in condemning attempts to pass other vessels in narrow or shallow channels, when there was a possibility of meeting vessels going in the opposite direction. Just how much Mr. Coulby's action contributed to this gratifying result can only be surmised, but it is certainly a noteworthy fact that before that warning was sounded, almost all of our large collision cases for some time had been due to suction, and that afterwards for several years suction cases were unknown in any of the fleets which Mr. Coulby controlled.

"The experience of the past season of navigation has furnished another coincidence almost equally striking. You will recall that the principal stress of my talk and of Mr. Coulby's warning at last year's meeting was placed upon failure to obey the rules relating to speed and signals in fog. A large majority of the important collision cases which occurred during the season of 1906 were fog cases, and were directly traceable to negligence of the kind pointed out. I am glad to say that there have been almost no fog cases of any magnitude during the season of navigation of 1907. Again it is impossible to say with certainty that this has been due to the warning of a year ago, but such coincidences certainly afford some ground for Mr. Coulby's faith in these meetings.

MEETING AND PASSING IN THE RIVERS.

"Reference has been made to the decrease in suction cases following a certain meeting of the masters of the Minnesota Steamship Co. in 1900. The records for 1907 would seem to indicate that the warning given seven years ago should be repeated. Several cases attributable to this cause have occurred on the rivers connecting the great lakes during the past season. Nearly all the important 1907 collisions occurred in the rivers. In all of them the narrowness, shallowness or crookedness of the channel, or the influence of suction, were prominent factors. In some of them, failure to blow proper signals was the cause of the disaster—or at least may prove to be the point upon which litigation may turn. Of this I shall speak later.

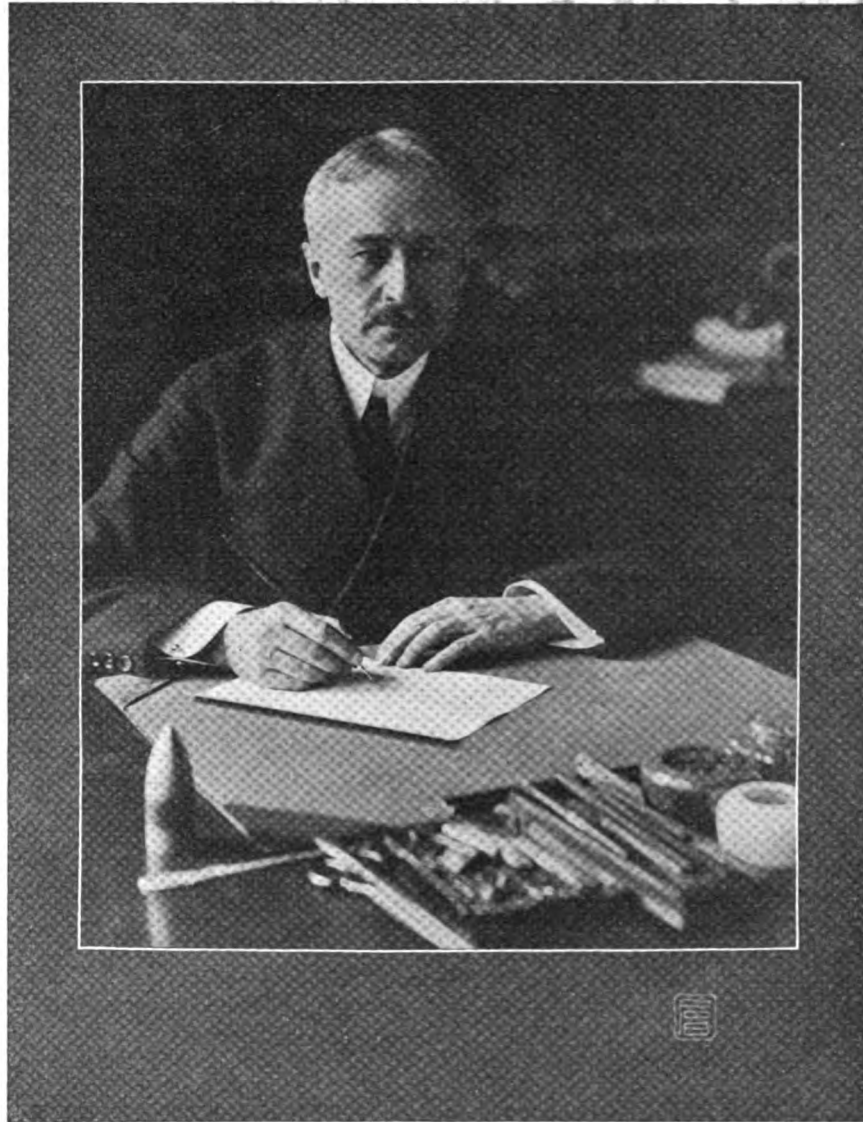
"The number of vessels which have been sunk this year between Bar Point and Fort Gratiot light, leads me to believe that masters have been in too much of a hurry—too apt to take chances for the sake of gaining a little time.

"It may be that no fault can be found with this tendency from the

strictly legal standpoint. In the absence of special conditions a vessel has a legal right to meet or pass another at any point in the rivers where meeting or passing is not forbidden by the rules. But from the owner's standpoint, you have no right to take risks in meeting or overtaking. No gain of time that you can possibly make will compensate for the risk assumed.

"In any event and in whatever location there is one precaution which is always possible. When meeting another vessel, yield all the room you can without getting too close to the channel bank. Don't try close shaves. The ranges are valuable aids to navigation but there is usually plenty of good water for a considerable distance on either side of them. A competent navigator ought under most circumstances, to be able to navigate so far on his own side of the channel as to make collisions with a passing vessel impossible. Yet it is a very prevalent practice, upon exchanging passing signals, to give way only a trifle and to pass close aboard. Loaded vessels are particularly apt to stick to the range line at all hazards. Some masters appear to think this a matter of right. Others, seeing that an approaching vessel is inclined to hug the ranges, are aroused to a corresponding obstinacy. The result is that two 600-ft. steamers may pass within 40 or 50 ft. of each other when there are several hundred feet of good water outside of each of them.

"Grosse Pointe channel is 600 ft. wide. There is plenty of room to give a berth of a hundred or even



MR. HERMON A. KELLEY.

200 ft. in passing—yet many masters seem to think themselves in danger of going aground if they get 20 ft. off the Isle aux Peches ranges. Several of this year's collisions have been due to this tendency to hug the ranges. In only one case has the difficulty arisen from getting too close to the channel bank. That too, is of course dangerous, but I am convinced that the principal trouble lies in the habit of sticking too close to the range line. In trying some admiralty cases I have sometimes wished there wasn't any range line on the charts. Then navigators would perhaps not depend so absolutely on certain rigid and unchangeable courses in the rivers, and would take more account of the unused deep water on either side.

"I believe that careful avoidance of meeting in narrow and dangerous places, and a greater willingness to

haul over and give the other fellow plenty of room, would result in almost as great a decrease in river collisions as close observance of speed and signal rules appears to have worked in fog collisions.

"I would make the following suggestions — not as necessarily obligatory from the legal standpoint, but as extra precautions which will, it seems to me, decrease immensely the risks of river navigation:

1. Never attempt to overtake and pass another vessel in a narrow, shallow or otherwise dangerous channel or on a bend. Wait until you have plenty of water, both in width and depth—then give the overtaken vessel plenty of room.

2. Never attempt to overtake and pass another vessel anywhere in the rivers or in any

narrow or shallow waters where there is any chance of meeting or coming abreast of a third vessel at the same time. There are but few places in the rivers where it is entirely safe for three large modern steamers to be abreast at once.

3. So far as possible, avoid meeting vessels going in the opposite direction in narrow or shallow channels, or on bends. Of course it will not always be practicable to comply with this suggestion. You will often have to use your discretion. But it will very often be possible to slow down, or hurry up, so as to avoid meeting in such places.

I am satisfied that greater caution upon this head would result in preventing many collisions.

4. Always give an approaching vessel plenty of room. Don't worship the ranges. They are not sacred. Learn where the deep water is and use it.

5. Don't be tempted to imitate

the example of masters who are disposed to hurry or crowd and never let false pride or temper lead you into doing a thing just to get back at the other fellow.

6. Whenever in doubt between two courses of conduct, always choose the safe one instead of the one which will gain time.

"The policy of the Pittsburgh Steamship Co. upon this subject has been repeatedly called to your attention. The company, of course, wants its vessels to make their trips with all the dispatch that is consistent with safety, but its positive instructions to masters are, never to take the slightest chance of collision, grounding or other accident, to save time. It doesn't pay. You may escape disaster 99 times out of a hundred, and may save a few minutes each time you take the risk, but if you have an accident the hundredth time, you may thereby destroy more property and cause more expense than you could earn by a thousand successful attempts.

OVERTAKING VESSEL.

"The question has been asked me: When does a vessel passing another in the same direction cease to be an overtaking vessel within the meaning of the rule requiring her to keep out of the way of the overtaken vessel?

"Pilot Rule VIII defines this point pretty clearly. It provides that no alteration of bearing between two vessels shall relieve the overtaking vessel of the duty of keeping clear of the overtaken vessel *until she is finally past and clear*. This statement of the rule should be sufficient, but I have come across several masters in the course of my admiralty practice, who still have an idea that they are past and clear of the overtaken vessel when they have her on their quarter. Let me say that you are never past and clear until your stern is not only past the stem of the overtaken vessel, but your vessel is wholly beyond where her proximity can in any manner affect or embarrass the navigation of the overtaken vessel. While your suction can operate you are not clear. While you are in her way, so as to interfere with her movements, you are not clear. The safe rule here as elsewhere, is—while there is the slightest room for doubt, give the overtaken vessel the benefit of the doubt.

"Another point in connection with overtaking. It is not unusual for an overtaking steamer to pull up to a point within her length of the steamer ahead before blowing a passing signal. Often the vessels will run along for miles with one close behind or even lapping the other. This practice is

one of the most frequent causes of river collisions. The rivers are so crowded with shipping that it is practically impossible for two vessels to remain in such a relative position for any considerable time without arriving at some bend or narrows, or meeting other craft bound in the opposite direction. Then complications are liable to arise.

"Such situations can be easily avoided. If the steamer behind will blow her signal requesting permission to pass before she gets within half a mile of the steamer ahead, and will then wait for a definite answer before attempting to approach, nine-tenths of the difficulty would disappear. Much of the trouble comes from the overtaking steamer assuming that she will in all probability be allowed to pass, and pulling up so close before getting an assenting signal, that some maneuver becomes suddenly necessary, which could have been entirely avoided if the rule had been obeyed. Then there is trouble, and in most cases the overtaking vessel, having the burden of keeping clear, is found in fault.

"But assuming that the overtaking vessel has obeyed the rule and blown for permission to pass while yet a proper distance astern, the vessel ahead can do much to insure the safety of the passing. Mr. Coulby has suggested some precautions to be observed by overtaken vessels, which should be generally adopted in practice. So valuable do these suggestions seem to me that I take the liberty of repeating them here in somewhat different form.

"As you know, one rule requires the overtaking vessel to keep out of the way of the vessel overtaken; another forbids the vessel overtaken from crossing the bows or crowding upon the course of the overtaking vessel; a third requires the overtaken vessel to hold her course and speed.

"Manifestly it is desirable if a steamer is to pass you, that you let her get by as quickly as possible, for by this means the danger of her proximity and of the approach of other vessels is greatly lessened. It is equally necessary to the safety of the situation that you give her as much room as possible.

"Owing, however, to the provisions of Rule 20, which require the overtaken vessel to keep her course and speed, it is difficult at times for the overtaken steamer to be as generous as safety requires, either by checking down or by giving way without committing a technical breach of the rule. This difficulty, however, can be avoid-

ed by checking down and giving way before you have given your consent to the vessel astern, to pass. The following simple rules will cover this point fully:

"When a steamer astern blows you a signal asking permission to pass in the rivers or in shallow channels, be sure of four things *before you assent*:

1. That there are no vessels coming in the opposite direction that can possibly be abreast when the passing takes place.

2. That no narrow places and no bends will be reached before the passing is completed.

3. That your own vessel is under slow enough speed so that the passing will not be a prolonged operation, liable to keep the vessels close to each other for any considerable distance.

4. That your position in the channel is such as to allow the overtaking vessel plenty of room to go by in safety.

"If any of these elements of safety are lacking, blow an alarm and warn the vessel astern to stay back, until you have reached a point where the above mentioned conditions are all present, and the passing can in your judgment take place in safety; then blow your assenting signal and hold your course and speed.

NAVIGATION IN FOG.

"What has been said about attempts to gain time by meeting and passing in dangerous places or under dangerous circumstances in the rivers, applies equally to attempts of like character in fog. The management of the company will never be heard to criticize you for any delay which may arise, not only from strict obedience to the rules of navigation, but from all additional precautions which will tend to secure greater safety to your ships and their crews.

"As I have already stated, there have been almost no serious collisions in fog during the past year. Every effort should be made to maintain this record. I expressed the opinion in my talk to you last year, that 90 per cent of all the fog collision cases would be avoided, if the following rules were uniformly obeyed:

First: Run at moderate speed, and upon hearing fog signals of another vessel not more than four points from right ahead, at once reduce your speed to bare steerage way, and keep it there until the other vessel is well clear. Take no chances on the bearing of the other vessel, but if you are in doubt whether she is not more than four points from dead ahead, take the benefit of the doubt and check down to bare steerage way anyhow.

Let me add that checking down

to bare steerage way within this rule is not simply checking your engines—it is checking your boat. In order to do this it may sometimes be necessary to stop your engines—or even in some cases to reverse. The rule requires that your vessel be proceeding at bare steerage way through the water, and leaves you to determine what engine signals are necessary to accomplish that result.

Second: Never navigate in a fog, or for that matter, never navigate at all, without a watchman properly stationed. The proper station for a watchman is on the fore-castle head, unless the weather conditions are such as to make that station impossible. Above all things, never navigate in a fog without a watchman on the lookout. He may be of very little practical assistance to you in your navigation, but when you come into court to defend a lawsuit, his absence is more than likely to lose the case.

Third: Never on any account fail to blow the prescribed signals in foggy weather, and never fail to give and to answer the passing signals prescribed by law.

"In view of the statistics of the past year, I believe my opinion is rather more than justified. The management has reason to believe not only from the showing made, but from close investigation of the facts, that masters in the fleets have in the main paid much greater heed to these rules than ever before. If the caution thus exercised could be extended to every ship on the lakes, I believe that fog collisions would practically disappear.

SIGNALS FOR MEETING AND OVERTAKING.

"Notwithstanding the clear, unmistakable rules on the subject, and notwithstanding the urgency with which this matter was brought to your attention at your last meeting, we have had reported to us during the past season a number of instances in which steamers have met, and several cases in which they have overtaken and passed other steamers without having first reached an agreement by proper exchange of signals. There is still too much of a tendency on the part of masters to economize noise. In conversation silence may sometimes be golden, although even here I have often thought that it more nearly resembles lead. If it ever means gold in navigation, it means gold in the other man's pocket.

"After all is said and done, the rules of navigation which are oftenest violated are those which require passing signals to be blown in all weathers and at all times when vessels are meeting or passing within half a mile of each other, and those which require an exchange of whistles before

overtaking and passing. The management has reason to believe that there has been a marked improvement in this respect during the past season, but as just stated, there are still some masters on these lakes who continue to meet and pass vessels without signal. In fact, it seems to be almost a matter of pride with them to use their own judgment as to whether a signal is necessary, rather than obey the plain and imperative requirement of the rules.

"It is true that these omissions usually occur between vessels meeting in the open lake, or in broad parts of the rivers in broad daylight, where there is perhaps comparatively little danger, but they are none the less violations of the rules. As such violations they are doubly harmful. In the first place, if any disaster occurs, a vessel which has violated the rule is almost sure to be condemned even though it may be extremely doubtful whether such violation contributed to the collision. In the second place, one violation of duty is apt to beget others. As I said at the outset, it is not luck that wins in the long run; it is cautious and competent seamanship; and there can be no cautious and competent seamanship where the rules of navigation are disobeyed.

"This is a phase of a too common inclination on the part of masters to substitute their own judgment for the rules of navigation. The intention of another vessel frequently seems so clear, and the possibility of trouble so slight, that it may sometimes seem almost foolish to exchange the signals required by law. But remember that every time you are guilty of such an omission, you are liable to forfeiture of your papers. In fact, a number of vessel owners have seriously under consideration a plan for reporting failures to blow overtaking and passing signals to the local inspectors. If the repeated warnings and requests of owners are not enough to secure uniform and unfailing obedience to the rules of navigation, there would seem to be no alternative but to call the attention of the proper government officials to the matter, and let the punishment fall where it belongs. Certainly a vessel owner cannot be blamed if he declines to assume the risk and pay the expenses of masters' disobedience of rules. As I said last year, the presumption is that every omission of a statutory requirement contributed to an ensuing collision. In order to remove this presumption it is not enough to show that such omission *might* not have been one of

the causes, or that it *probably* was not. In order to escape from condemnation, you must show that it could have been. In nine cases out of ten this is impossible. Hence, failure to blow the required signals or otherwise to comply with the rules is not simply dangerous from your standpoint as a sailor. It may not in your opinion have had anything to do with the catastrophe. But the presumption of fault which it raises against your vessel may be just as costly to your owner as though it had been the principal cause. I repeat, therefore, that owners can not be blamed if they not only decline hereafter to shield masters from the discipline of the inspectors, but, actually take an active hand in bringing that discipline into play.

ANSWERING OVERTAKING SIGNALS.

"There is another singular and equally dangerous practice, which it seems to be almost impossible to prevent, in connection with overtaking signals. I suppose if any one of you were asked what signal the rules require to be blown when one vessel wishes to consent to a request of an overtaking vessel to pass on the star-board or port hand of the vessel overtaken, you would promptly answer, one or two blasts, as the case may be. And if you were asked what signal should be given if the overtaken vessel did not consider it safe for the overtaking vessel to pass, you would say the alarm or danger signal. In other words, every one of you knows what the rules require. Yet strangely enough, a large number of you persist in blowing a signal which the law does not recognize and the meaning of which is in dispute amongst the most experienced masters on the lakes. I have known of repeated instances where overtaking vessels have blown say a one-blast signal to pass, and when the overtaken vessel has answered with three blasts. It is needless to say that three blasts does not comply with any rule of navigation. I have repeatedly asked masters on the witness stand what such a signal means. The answers are almost invariably contradictory. About half the men on the great lakes will tell you that it means check down and stay behind; the other half will say it means you may pass me, but check down and go by slowly.

"It should be a sufficient condemnation of the three-blast whistle that it does not comply with the rules of navigation. But when in addition to this, it is known to be actually ambiguous and misleading—when one mas-

ter may understand it to mean one thing and another master precisely the opposite thing, I cannot understand why anyone should even think of using it. This point was put up to you strongly last year. It was given the widest circulation by publication in the MARINE REVIEW. I have reason to believe that the attention of nearly every master on the great lakes was called to it. In the revised pilot rules issued by the board of supervising inspectors on Feb. 14, 1907, the language of the old rule "several short and rapid blasts" was changed so as to read "four or more short and rapid blasts of the whistle," thus removing the last vestige of a pretence for misinterpreting the rule. Yet the same old three-blast whistle is still heard in the land.

"Abolish it in connection with passing signals. If you are willing to allow a vessel to overtake and pass you on your starboard hand, answer is one-blast signal with one blast. If you think it unsafe for him to pass, blow him several short, sharp blasts.

ALARM SIGNALS.

"I am aware that many of the things I am saying are little more than repetitions of what was said at your last meeting, but when one warning fails to take effect, it must be repeated.

"It is seldom that a mistake is ever made by calling attention to a situation of peril by blowing a general alarm. Of course such a signal should not be blown when it would be in violation of the rules of navigation, or when it could confuse a passing agreement.

"The requirements of the rules as to alarm signals are well known to all of you. I have already spoken of the alarm in connection with overtaking. Generally speaking, as you know, the alarm should be used wherever you deem it unsafe to accept and assent to a passing signal of any kind from another vessel, and wherever you fail to understand the course or intention of an approaching vessel, whether from signals being given or answered erroneously, or from any other cause.

"Besides the cases, however, where a general alarm is contemplated by positive rule, there are many other occasions in which its use might either actually prevent disaster, or would at least have a most important bearing upon resulting litigation.

"You can never be sure that the man on another vessel's pilot house sees all that you see, knows all that you know, or appreciates fully the danger of a situation, as you appreci-

ate it. A striking illustration would be a case in which your steering gear had given away, or you were too near the bottom or the channel bank, or for some other reason were not in full control of your vessel, and felt that a warning of the situation should be given.

"A more common example would be a situation where you had concluded that the two vessels could not pass in safety; that a collision was inevitable unless unusual measures, such for instance as backing, were adopted. In such cases and in many others, I have frequently felt that an alarm signal would at least have been a most convenient item of testimony at the trial, and might even have averted the collision.

CHANGES IN THE PILOT RULES.

"On Feb. 14, 1907, the board of supervising inspectors, as you know, adopted a new set of pilot rules, embodying considerable alterations. Many of the changes are merely verbal; others are evidently introduced for the sake of greater clearness; a few involve substantial difference of meaning. The provisions of the new rules appear to be so plain that it is unnecessary for me to comment upon them. Let me recommend, however, that these new rules be carefully studied. I can think of no better way to do this than to take a copy of the new rules and compare it word for word with the old rules. In this way you will best note the differences, and understand what the supervising inspectors had in mind in making the revision.

CONCLUSION.

"Finally, let me congratulate you upon the successful year just past. There have been some bad accidents, and there are still some things that can be improved in the navigation and discipline of the fleet; but when the final balance is struck, I am satisfied that the year's business will show damage bills considerably below the average. To maintain this record would be good. To improve it would be better. I believe that continued attention to the matters just discussed will make the record for 1908 the best in the history of the company. I believe further that the example of a large body of masters, such as are assembled here today—all strictly obeying the rules of navigation, all exercising the greatest caution, all pulling together with their management for the best results—will have its effect upon other masters on the great lakes.

"Every master outside the fleet who becomes more observant of the rules, more careful in his navigation, more attentive to the interests of his owners, is helping us, because he is lessening the chances of accident to our vessels. If in time the example of caution can be spread to all the fleets on the lakes, there is no question in my mind that collisions will be well nigh eliminated. Your management stands for safety before everything else. It lies largely in your hands to make that policy effective, to spread it among other fleets by making caution the custom of the lakes."

CENTER RANGES ARE NECESSARY.

Editor MARINE REVIEW:—I notice in the issue of Jan. 23 that, at the annual meeting of the Lake Carriers' Association, it was suggested that the center ranges should be abolished; it was argued that their establishment has been a positive menace to navigation and the direct cause of many collisions. The subject is one of great importance to vessel owners and masters, one that should be given careful consideration before any action is taken. They may be a menace to navigation and the direct cause of many collisions, if so, the maritime interests of the great lakes have long been making a costly mistake, and the official reports of accidents vary much in error as to the real cause of collisions.

I am of the opinion that the argument in favor of abolishing the center ranges, which refers to the fact that there were 16 collisions last year between Port Huron and Bar Point, is rather far fetched. Of the 16 only four occurred on ranges, in three of these cases disabled steering gears were the causes given. The St. Clair river has been the scene of more collisions than any other connecting waterway of the great lakes and in almost every case they have occurred where there were no ranges. In nearly every case where collisions have occurred on ranges they have been "three-cornered" and the suction, the direct cause of the collision. Since the advent of 10,000-ton steamers there have been a few collisions at short bends where ranges intersect, but to eliminate the center ranges would not be a safeguard to such an accident. The better way would be, for the up-bound steamer to check speed until the down-bound boat had made the turn, if this were made a rule of navigation, there would be very little danger of collisions in channels marked by the center ranges. Among navigators, it is a well-known fact that fully 60 per cent of the night collisions in the rivers are caused by the extravagant use of helm, and that occurs whenever the

wheelman is unable to see lights by which to steady the boat. The master may know his business and know where he wants the boat, but unless the wheelman can see something to steady by and tell how the boat is answering the helm, the masters' superior knowledge will never save a collision.

The center ranges are of inestimable value to navigators in determining the error of the compass. In cloudy weather they are the only means at hand and are used by nearly every master for that purpose; many masters rely on them almost wholly, while others use them to check all courses laid by azimuth. There are too many collisions, but I think that in many cases they are due to the "hurry-up-pace" that has always been a characteristic in lake navigation. An effort to lessen the number of collisions by elimination of the center ranges, would be like cutting off a dog's tail to make him stop howling.

ERYAS.

CENTER RANGES ESSENTIAL.

Editor, MARINE REVIEW:—In compliance with your editorial invitation I beg to submit my ideas respecting center ranges:

I consider range lights absolutely essential for safe navigation. Not only are buoys liable to be displaced, but it is impossible to steer on them, and any attempt to use them as 'guides' would inevitably result in wilder steering than by sighting on fixed short marks.

Most intricate cuts are marked by range lights at each end. Instead of placing these in the center as is now the practice I should advocate, as I have unsuccessfully done on previous occasions, placing them so that the upper pair would indicate the axis of the starboard half and the lower pair the axis of the port half of the cut. By this means vessels passing would always keep the range ahead of them dead on, and would give each other a safe berth. I have never quite understood the sailors' objection to this scheme; I imagine it is because they object to any system that they have not been accustomed to.

Respectfully,

WM. P. ANDERSON.

Ottawa, Can., Feb. 3.

SUGGESTS DOUBLE RANGES.

Editor MARINE REVIEW:—In my opinion the abolition of the center ranges would be an excellent up-to-date idea. In the great increase in the number, size and draught of steamers that now navigate the great lakes channels the great problem seems to be that of passing each other, without damage, in these narrow

channels. A great many pilots, especially of the larger steamers, seem to think that the safe part of the channel is only that shown by the ranges and they will keep their vessel on the range regardless of the fact that they leave but little room for boats they may meet. And then in swinging off a center range at night to give room for a meeting vessel it is often difficult to judge just how far you can open these ranges without getting out of the channel. If different ranges for ascending and descending vessels were established it seems to me the whole problem would be solved. It is no uncommon thing for big steamers to pass within a few feet of each other in these narrow channels at night, neither pilot caring to give a foot more than they really have to. They are afraid of opening the ranges too far and striking the sides of the channel.

I cannot see one point in favor of the center ranges over the plan of double ranges.

LAKE PILOT.

Cleveland, Feb. 4.

CENTER RANGES A GOOD THING.

Editor MARINE REVIEW:—Referring to article in MARINE REVIEW of Jan. 23, proposing the abolition of center ranges, I must admit that I have yet failed to see how we can get along successfully without them.

Relative to the keeping the center of the channel by some masters that is true, but, I have noticed this is practiced both on ranges and where there is none, I think what we should all try to learn first is to take only half of the channel in tight places. This can be done with the assistance of the ranges for guidance. On a dark night they will show us what part of the channel we are in.

Gas buoys and shore lights are of as great an importance as ranges but buoys are a movable thing, one cannot depend on them being in the same place in the spring and fall of the year when gas buoys are taken in and stakes take their place; yet the ranges stand and show the mariner where the channel is.

On the route from Buffalo to Duluth, I think the most difficult place to navigate in the night is the lower Hay Lake cut, this being some 300 ft. wide with crib lights on both sides. What a great help it would be to have a shore range ahead to be guided by.

I cannot make out an instance looking over the accident list of the past season where center ranges were the direct cause of a collision.

I also note in the same issue of a captain who has sailed for 20 years without an accident, and who knows his business and can get along without ranges. I think on some dark night if he took his boat down the river without them he would be glad to have them relighted. Remarks of this nature by an employer of one of his masters are very nice, but what must the rest of us think of ourselves.

In conclusion will say let us all try to use the aids to navigation that our great government has provided as they were intended, that is only use half of the channel and let the other fellow have the other half.

A MASTER.

Cleveland, Feb. 10th.

CENTER RANGES.

Editor MARINE REVIEW,

Sir:—Referring to article in MARINE REVIEW of Feb. 6, I am opposed to the idea of abolishing the center ranges. I think it is one of the best aids to navigation of the day.

Any man in actual service speaking from his own point of view would substantiate my statement.

A MASTER.

Cleveland, Feb. 8.

GOOD THING ON A DARK NIGHT.

Editor MARINE REVIEW:—I have the honor of replying to your letter of Jan. 23 referring to the advisability of abolishing the center ranges. As referred to by Mr. Coulby at the annual meeting of the Lake Carriers' association, beg to say in reply that I heartily approve retaining the center ranges for all time to come and the establishment of more whenever it is possible to do so. I think all the vessel masters will bear me up in the statement that they are a very nice thing on a dark night.

C. R. NEY.

Cleveland, Feb. 7.

CHART OF THE DETROIT RIVER.

The United States lake survey office, Detroit, has issued a new edition of the chart of Detroit river, from Windmill Point light on Lake St. Clair to Detroit River lighthouse in Lake Erie. The Detroit river has long been one of the most critical channels of the lake system, because over 84 per cent of the traffic of the great lakes converges in the artificial rock cuts in the lower river. The new edition shows many changes from the conditions shown by prior charts. It

is printed in five colors, and is on a scale of five-eighths of a mile to the inch.

In addition to the regular chart, there is an inset from the north red gas buoy of Ballards Reef channel to the Detroit River light, showing on a larger scale the improved channels of the lower river and the aids to navigation marking them, as they will appear on the opening of navigation in 1908. The inset shows the lines of the new alternating channel to be constructed, passing to the west of Bois Blanc island.

A second inset chart on smaller scale shows the extension of the ship channel from Detroit River light out into Lake Erie, with points of departure for down-bound vessels and points of convergence for up-bound vessels, and courses radiating from these for Lake Erie navigation.

WATER AT LIME KILNS AND POE LOCK DURING 1907.

Herewith are published tables giving the monthly averages of water at the Lime Kiln crossing and in the Poe lock during 1907. In explanation of the Limekilns it should be said that in April last two channels were opened along the crossing, the west-erly improved channel with a mean

October	21.0	19.0
November	20.7	18.7
December	20.6	18.6

During 1908 a 400-ft. channel with a mean depth of 22.7 ft. will be opened at the Lime Kiln crossing and the draught of vessels will then be regulated by that portion remaining unimproved, viz., Ballard's Reef channel. The Bois Blanc Range and Bar Point Shoal channels have been improved during the past year to a mean depth of 22.7 ft. A chart showing the conditions that will exist during 1908 is printed herewith.

The monthly averages of water in the Poe lock for the navigation season of 1907 were as follows:

April	19.90
May	19.85
June	20.25
July	20.49
August	20.70
September	20.84
October	20.43
November	19.97
December	19.55

PORTAGE CANAL COMMERCE.

There are many interesting things in Major Graham D. Fitch's report of

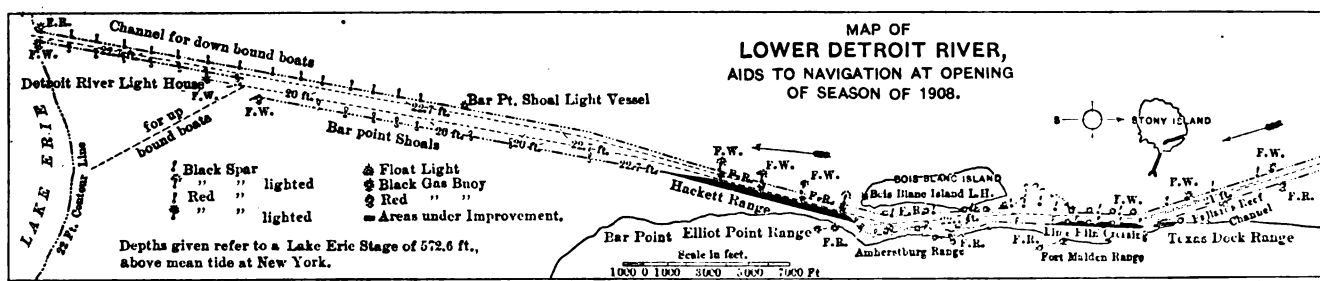
showing the growth of the largest single cargo yearly since 1892, as follows:

Year.	Tons.
1892.....	1,607
1893.....	1,800
1894.....	2,080
1895.....	2,325
1896.....	2,268
1897.....	3,024
1898.....	2,919
1899.....	3,410
1900.....	4,406
1901.....	4,500
1902.....	5,000
1903.....	6,300
1904.....	7,052
1905.....	9,400
1906.....	10,400
1907.....	11,115

DETROIT STEAMSHIP ELECTIONS.

The annual election of officers of the various steamship companies, having headquarters at Detroit, have resulted as follows:

Detroit & Buffalo Steamboat Co.: President, George Hendrie; vice president and treasurer, Philip H. McMillan; secretary and assistant treasurer, George M. Black; general manager, A. A. Schantz; directors, George Hendrie, Philip H. McMillan, Calvery Morris, D. C. McIntyre, Strathearn Henry, A. C. Angell, A. A. Schantz, George M. Black and D. C. Wilder.



depth of 22.7 to be used by down-bound boats, and the easterly unimproved channel with a mean depth of 19 ft. to be used by up-bound boats. The draught of down bound boats was therefore regulated not by the depth of the Lime Kiln crossing but by the depth at that part of the channel not yet improved, viz., Ballard's reef channel, Bois Blanc Range channel and Bar Point shoals, while the draught for up-bound boats was regulated by the depth at the Lime Kiln crossing. The following table shows the monthly mean depth during 1907 for both channels:

Month	West channel for down-bound boats	East channel for up-bound boats
April	20.1	20.1
May	20.3	19.3
June	20.8	19.8
July	20.8	19.8
August	20.6	19.6
September	20.3	19.3

the marine commerce of the Portage lake ship canals for the year 1907. The commerce of Lake Superior is heaviest during July and August, yet more freight goes through this waterway in October and November, or in the stormy season, than at any other time. It shows clearly the extent to which the canals are used for refuge. The average net registered tonnage of the largest 20 vessels that passed through was 4,344. The navigation season covered a period of 225 days extending from April 29 to Dec. 9. The total vessel freight bound up and down was 2,448,041 tons, valued at \$101,774,776. This is an increase of 139.8 per cent over the freight movement of 1897, 10 years ago. It is a decrease, however, of 7.5 per cent over the movement of 1906. The total number of vessels using the waterway bound up and down was 3,647 of a registered tonnage of 2,477,687 tons. An interesting comparison is given

Detroit & Cleveland Navigation Co.: President, Philip H. McMillan; vice president, James McGregor; secretary-treasurer, George M. Black; general manager, A. A. Schantz; directors, Philip H. McMillan, James McGregor, George Hendrie, Emory W. Clark, A. A. Schantz and George M. Black.

White Star Line: President, A. A. Parker; vice president, L. C. Waldo; treasurer, John Pridgeon; secretary and traffic manager, C. F. Bielman; general manager, B. W. Parker; Directors include the officers and Hugo Scherer, W. Howie Muir, Robert T. Gray and A. W. Colton.

Adams Transportation Co., and Monroe Transportation Co.: President, John I. Adams, Detroit; vice president, George Craig, Toledo; secretary, C. C. Whitmore, Toledo; treasurer and manager, John Craig, Toledo, O. The above and L. S. Sullivan are the directors of the two companies.

American Steamship Co.: President, Gilbert N. McMillen; vice president, secretary and manager, Maurice V. McMillan; treasurer, M. H. Williams. The directors include the officers and W. K. Bixby of St. Louis and P. H. McMillan of Detroit.

Cleveland & Oscoda Transportation Co.: President, John T. Thompson, Port Sanilac; secretary and manager, Charles W. Thompson, St. Clair.

Detroit River Transit Co.: Meeting will be held later. Officers will remain as at present. President, F. M. Aiken; vice president, Capt. Edward Donoghue; treasurer, Harry Beecher; secretary, A. A. Main. The directors are the officers and Samuel Bond.

Grace Harbor Lumber Co.: The annual meeting was held last month. Officers are unchanged. President, E. D. Jones; vice president, L. H. Jones; secretary, treasurer and manager, H. Leonard Wilton.

Hope Transportation Co.: President and treasurer, W. R. Stafford, Port Hope; vice president, C. D. Haywood, Cleveland; secretary and manager, John A. Francombe, Detroit. Besides the above the directors include Thomas K. Christie, New York, and M. J. Jenness, Cleveland.

Ionia Transportation Co.: Meeting will be held next week. Officers: President and treasurer, F. M. Thompson; vice president and manager, E. L. Thompson; secretary, Hugh Havey. Officers are also directors.

Michigan Steamship Co.: President, Frank J. Hecker; vice president and manager, Philip H. McMillan; secretary-treasurer, George M. Black. Watson M. Freer, of Detroit and John B. Romy, of Santa Monica, Cal., with the officers comprise the directors.

National Steamship Co.: President, Gilbert N. McMillan; vice president, secretary and manager, Maurice B. McMillan; treasurer, M. H. Williams. These also are directors.

Nipigon Transit Co.: President, Alfred K. Keefer; vice president, David Milne; secretary-treasurer, Ole Weber.

Northwestern Transportation Co.: President, Harvey H. Brown, Cleveland; vice president, Albert F. Peck; secretary and manager, L. C. Waldo. Directors comprise the officers and Charles T. Pratt of Cleveland and George E. Berriman of Detroit.

J. Emory Owen Transportation Co.: President, J. F. Owen; vice president and treasurer, W. J. Gray; secretary, Robert T. Gray.

Roby Transportation Co.: President, John B. Roby, Santa Monica, Cal.; vice president, John Duddleson, Sault Ste. Marie; secretary, treasurer and

manager, L. C. Waldo, Detroit. The officers are the directors.

Stewart Transportation Co.: President, George Beck; vice president and manager, A. E. Stewart; secretary-treasurer, C. F. Bielman. Directors are the above and John J. Barlum and George Leshner.

Wayne Transportation Co.: President and general manager, John A. Francombe; secretary, W. G. Teuton; treasurer, E. McWilliams.

Wolverine Steamship Co.: President and manager, Philip H. McMillan; vice president, Frank J. Hecker; secretary-treasurer, George M. Black. Directors include the officers and Watson M. Freer and John B. Roby.

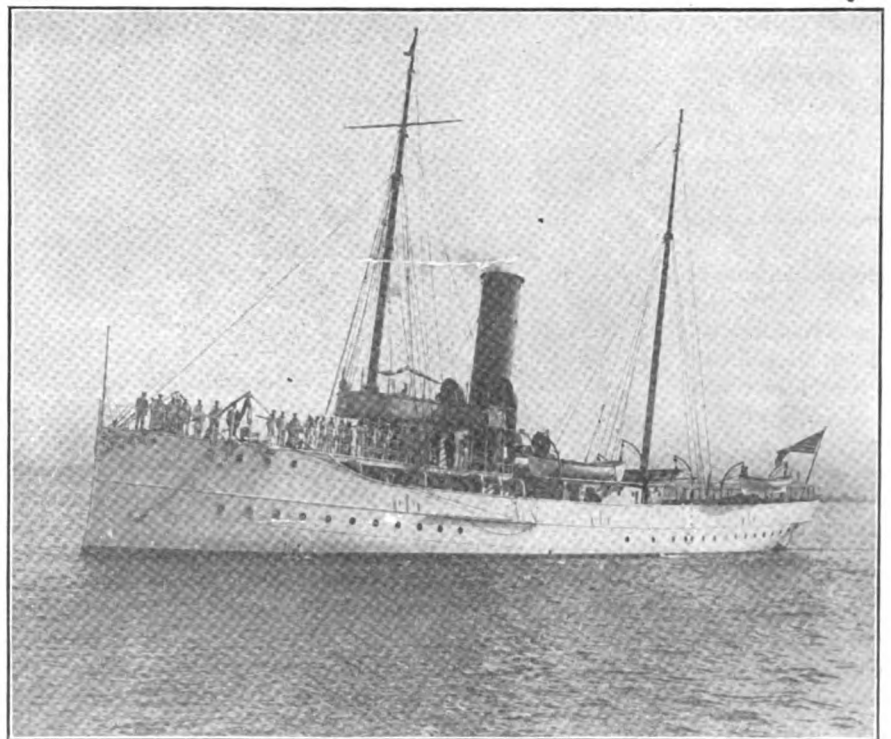
The Detroit Steamship Co., The Fremont Steamship Co., and the Postal Steamship Co., formed in recent months, largely by Detroit men, are incorporated in other states and hold their annual meetings at times specified in the articles of incorporation.

REVENUE CUTTER FOR LAKE SUPERIOR.

The revenue cutter Tuscarora rendered a service that was much appreciated by vessel owners last fall in scouring Lakes Michigan and Superior for any vessels in distress. The ser-

vestments that it would be well for a cutter to be assigned to Lake Superior alone, as this is the lake of greatest danger. A trip from Chicago to Duluth is almost equivalent to a trip across the ocean and is too much for one vessel to cover satisfactorily. The treasury department is endeavoring to secure an appropriation for the construction of a revenue cutter for Lake Superior alone. Capt. P. H. Uberroth of the revenue cutter Tuscarora, which performed the joint service last fall, has recommended that a new vessel be constructed for Lake Superior. The new vessel would be constructed on the same plans as the Tuscarora but of somewhat more tonnage and draught. Representative Adam Bede, of Duluth, has introduced a bill in the house for the necessary appropriation. It is confidently expected that it will pass, as the necessity exists for this service.

The necessary legislative steps are now being taken to name the west channel at the mouth of the Detroit river the Livingstone channel in honor of President Livingstone of the Lake Carriers' Association. Congressman Denby has the matter in hand.



U. S. REVENUE CUTTER TUSCARORA.

vice was such as to convince lake interests that it would be well for a cutter to be assigned to Lake Superior for any vessels in distress. The service was such as to convince lake in-

The Pittsburg Steamship Co. has given contract to the Pond Lumber Co. of Conneaut for the construction of canvts stretchers for each vessel of its fleet.

COL. CHARLES E. L. B. DAVIS.

On Sunday next Col. Charles E. L. B. Davis, government engineer stationed at Detroit, goes on the retired list with the rank of brigadier general. He will in all probability supervise the construction of the Davis lock at the Sault, or at any rate the preliminary operations in actual construction. Since Gen. Poe no engineer has won such lasting regard along the lakes as has Col. Davis. He has shown himself to be not only a competent and progressive engineer, but a cultured gentleman and charming companion as well, possessing a vein of quiet, dry humor which makes him an ideal after-dinner speaker. At the last annual meeting of the Lake Carriers' Association Col. Davis was presented with a loving cup out of which everyone present drank to the colonel's health.

Col Davis was born at New Haven, Conn. After completing one year in Yale College he went to West Point in 1862, graduating in 1866 and being assigned to the engineer corps of the army. He served as an assistant on river and harbor improvements at Boston for one year and was then for two years a company officer with the engineer battalion at Willett's Point, New York harbor. He then spent two years as instructor of mathematics at West Point, at the expiration of which time he returned to Willett's Point as battalion quartermaster and commissary, where he remained two years. In 1872 he went to New Orleans on duty connected with the improvement at the mouth of

the Mississippi river. In 1876 he was ordered to Galveston, Tex., where he remained until the spring of

neer officer, division of the Philippines, and in the latter part of that year was sent to Detroit, where he has

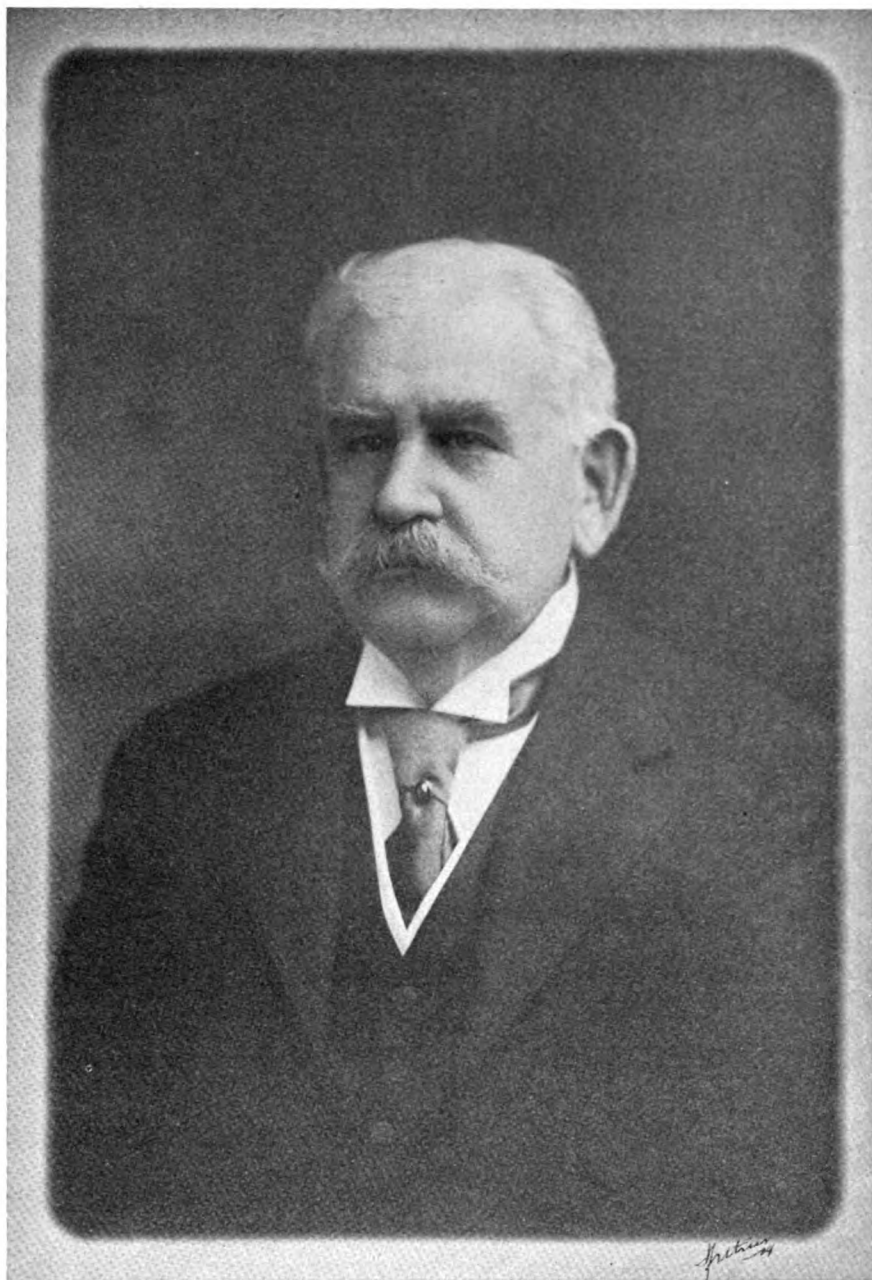
remained ever since. The Detroit station is the most important on the lakes, extending from the Lime kilns to Sault Ste. Marie, and practically embracing all the restricted and artificial waterways on the lakes.

To recapitulate, Col. Davis has been stationed on the Atlantic coast for ten years, on the Gulf of Mexico for nine years, on the great lakes for fifteen years, on the Pacific for six years and in the Philippines for two years, a total of forty-two years. It will be seen that more than one-third of his active service has been spent on the great lakes. His promotions in the engineer corps have been as follows: Second lieutenant, June 18, 1866; first lieutenant, March 7, 1867; captain, Sept. 12, 1877; major, April 7, 1888; lieutenant col-

onel, May 3, 1901; colonel, Oct. 15, 1905; retiring Feb. 16, 1908, with the rank of brigadier general.

Lieut. Col. Townsend, government engineer who has been in charge of work on Lake Erie with headquarters at Cleveland for the past few years, has been assigned to Detroit to succeed Col. Charles E. L. B. Davis. Lieut. Col. John Willis, at present on leave of absence, has been assigned to Cleveland.

The harbor commission of San Francisco is contemplating the building of steel and concrete wharves.



COL. CHARLES E. L. B. DAVIS.

1881 when he went to Sabine Pass, Tex., where he remained for about six months. The latter part of 1881 he went to Buffalo, N. Y., as engineer of the tenth light-house district and in 1882 was transferred to Detroit, Mich., as light-house engineer of all the lakes. In 1886 he went to Milwaukee in charge of river and harbor works. In 1892 he was ordered to Washington, D. C., in charge of rivers and harbors, fortifications of the Potomac river and Hampton Roads and the Washington aqueduct. In 1896 he went to San Francisco in charge of rivers and harbors and fortifications. From 1902 to 1904 he was chief engi-

ATLANTIC COAST GOSSIP.

Office of the MARINE REVIEW,
Room 1005, No. 90 West St.,
New York City.

Owing to the enormous quantity of ice adrift in the Hudson river and New York bay in the early part of the week, navigation was seriously impeded and traffic was well-nigh impossible around many of the docks and slips. In the East river the ice worked in towards the Brooklyn shore, effectually choking up many of the docks and, where lighters were necessary in unloading vessels, bringing the work to a standstill. Several barges were sunk or damaged by the enormous masses of ice, one barge going down with 500 tons of coal.

Conditions were particularly bad in the lower bay, a number of vessels caught in the ice flows at the turn of the tide dragging their anchors and running afoul of one another. Here, also, the barge fleet suffered heavily, as did the smaller size of sailing and other craft. The price of towboat hire soared, outside orders being taken at about 30 per cent advance on the usual rate for regular customers. It is an ill wind, etc.

The trans-Atlantic passenger rates agreed on at the conference of the representatives of the various steamship lines in London went into effect on Monday. The new list of prices shows many changes from those that were in effect before the conference, particularly in saloon and second cabin accommodation. In many cases the prices have been nearly doubled, and more than doubled in some cases.

The regular trans-Atlantic voyager will probably console himself with the prospect of a few more privileges and a little more deck space, but the individual who during these cold winter months has been looking forward to doing a European trip in rich style at cheap rates will have to content himself with Asbury Park or some other salubrious spot nearer home.

Capt. Scott, of the steamer Maraval, which arrived at New York on Monday, reports that 500 or more miles due east of Charleston, S. C., the four-masted derelict Edward J. Berwind, waterlogged and with some canvas still set, is heading towards mid-Atlantic. The Maraval came up with the abandoned schooner on Feb. 7, the steamer's officer who boarded the Berwind reporting evidence of the hurried departure of the crew. The schooner's decks are awash, but, owing to being laden with lumber, is

unsinkable and a serious menace to navigation.

The Edward J. Berwind hails from Wilmington, Del., is 196 ft. in length and of 1,141 tons, and was built at Camden in 1894. She was commanded by Capt. Edward Lacey and had a crew of ten men. The captain was the principal owner, the other owners being Swan & Sons and Edward J. Berwind of New York.

Before sailing for South America via Kingston and Colon on the Royal Mail line Atrato, Alfred S. Williams, managing director of the line, announced the intention of the company to afford greater facilities to American merchants for shipping their goods to the Argentine, Brazil, Peru, and Chile. The company will probably put on a direct service of a large fleet of vessels from New York to Brazil and the Argentine, to carry mails and passengers in addition to freight.

A cablegram from Port Barrios to the United Fruit Company at New Orleans reports the wrecking of the steamer Anselm on a reef off the coast of Spanish Honduras.

The Anselm sailed from New Orleans January 30 with a full passenger list, bound for Port Barrios, Belize and Puerto Cortez, and has for the past eight years been carrying mails between New Orleans and Central American ports. She was built in England about twenty-eight years ago, and for several years carried mails between Liverpool and Buenos Ayres.

The steamer J. L. Luckenbach will be the pioneer boat of the new Colonial Line to Porto Rico, and will be despatched from New York about Feb. 18. The Colonial Line will make regular sailings and will call at San Juan, Ponce, Mayaguez and other ports as inducement offers.

Mr. Albert Kinkel will represent the new line, with offices at 18 Broadway, New York City.

At the annual meeting of the North German Lloyd Steamship Company on Feb. 7 the shareholders unanimously approved a resolution to raise a loan as a preliminary toward building four large steamers, which Director Wiegand declared were urgently needed to meet the ever-growing competition of other lines.

That the exodus of steerage passengers is still much higher than usual is proved by figures compiled by the

International Steamship Conference. During the month of January the outflow of passengers in this department reached a total of 58,767, an increase of 42,495 as compared with the same month of last year. On the other hand, incoming steerage travel totaled only 15,452, which is a decrease of 16,038 from January of 1907, which totaled 31,470.

Mr. Eads Johnson, formerly of James Shewan & Sons, New York City, has taken charge of the New York office of the New York Shipbuilding Company, succeeding Mr. W. De W. Dimock, resigned.

The ice continues heavy in both the upper and lower Delaware, thus far, however, having proved no serious obstacle to navigation.

Captain Gibson, of the British steamer Miramar, which arrived at Philadelphia from Cienfuegos on Sunday, reports that on Feb. 8, off Winter Quarter Shoal, he passed a wrecked schooner with masts above water, making a dangerous menace to navigation to all vessels bound up the coast.

The schooner yacht Magic was wrecked last week at Key West, where she was used as a pilot boat, capsizing and going to the bottom in deep water. She was built at Philadelphia in 1857, by Captain R. F. Loper, a local yachtsman, her original name being the Madgie.

John A. Rensel, the retiring commissioner of docks and ferries, has announced that within forty days from the present time the department will be in a position to begin letting contracts for work on the city's plans for improvement of the South Brooklyn water front, which calls for an expenditure of more than \$11,000,000. A little over \$5,000,000 will go to pay for the property, leaving a substantial balance for the actual work of improvement. Some of the latter fund will be used in roofing the new Chelsea piers, but the major portion will be available for the South Brooklyn work.

The Massachusetts Humane Society has voted medals to certain members of the crew of the White Star steamer Cymric, which rescued the crew of the St. Cuthbert.

It is thought that action will also be taken by the United States government, the British government, and the steamship company.

ANSWERS TO QUESTIONS FOR WHEELSMEN AND WATCH- MEN.

357. NE.
358. SSE.
359. WSW $\frac{7}{8}$ W.
360. NW by W.
361. NW by W $\frac{3}{4}$ W.
362. NE by E.
363. To the left.
364. To the right.
365. To the right.
366. To the left.

QUESTIONS FOR WHEELSMEN AND WATCHMEN.

379. What point is $7\frac{1}{2}$ points to the right of E $\frac{3}{4}$ S?
380. How does ESE get its name?
381. Why is WNW $\frac{1}{2}$ W so named?
382. What point course is N E $\frac{1}{2}$ E?
383. Express E $\frac{1}{4}$ N in degrees?
384. From which points on the compass do you reckon degrees from?
385. Why?
386. How much is 18° equal to on the compass?
387. How many points is S by W $\frac{3}{4}$ W from north?
388. How many degrees is it?
389. What point is to the right of SE?
390. How much is 25° equal to on the compass?

QUESTIONS FOR MASTERS AND MATES.—NO. 58.

760. Deviation on N with ship on an even beam is 5° Ely., and when heeling to starboard 14° the deviation is 6° Wly.; how much is the heeling co-efficient and what would the heeling deviation be with 16° of heel with the ship still heading N?

761. Under the same conditions how much and which way would the heeling deviation be with 9° heel to port?

762. In what ratio does the heeling deviation change from N or S toward E and W?

763. What are the three principal causes for heeling deviation?

764. Heading N E by N with a port heel of 7° the heeling deviation is 5° Wly., the deviation with ship upright on NE by N is 8° Ely., what is the heeling co-efficient?

765. Under the same conditions what would the heeling deviation be with the ship heading SSE with a starboard list of 12° , the deviation for ship's head upright being 4° Wly.?

766. What is retentive magnetism and its cause?

767. What effect has it in the deviation of the compass?

768. Supposing your boat has been heading about NE all winter what kind of deviation would this make with the ship's head between S and E. Would it increase or decrease westerly deviations in that quadrant of the compass?

769. Supposing that under the same conditions in using the table of deviations from the fall before would you expect your easterly deviation to increase or decrease on points between N and W?

SAWDOLET FLOORING.

Mr. C. Clemente, No. 1722 Oregon avenue, Cleveland, has met with signal success in the introduction of Saw-



MR. C. CLEMENTE.

dolet upon lake ships. Mr. Clemente has spent a lifetime in granite and marble work and it was while engaged in this occupation in Italy that the idea occurred to him of developing a composition flooring that should be impervious to water, fire, and dust. After many experiments he succeeded in developing a flooring of monolithic character and of successfully adapting it to iron, brick or wood. Sawdolet is a plastic substance of about the consistency of mortar, made of pulverized and granular wood fiber and mineral substances, colored by the admixture of various oxides to any tint desired. In ordinary building construction the material is laid directly on top of the rough wood

floors. In applying it to steel decks, rough sawed hardwood cleats, $\frac{3}{8}$ in. by 2 in. are bolted to the deck 12 in. to 14 in. on center with bolt spaced 12 in. to 14 in. The material is then laid in three layers, the first layer adhering to the deck, the second being a long filler, and the third an enameled surface, making a continuous flooring $\frac{5}{8}$ in. thick.

Since this flooring was first installed on lake vessels Mr. Clemente has had no difficulty in securing duplicate orders, as it gives entire satisfaction, being practically indestructible. The flooring has the further advantage of being a poor conductor of heat and sound and is easily cleaned. Sawdolet has been installed upon the following lake ships: Douglas Houghton, Wm. Edenborn, D. R. Hanna, James B. Morrow, M. Andrews, L. S. DeGraff, W. M. Mills, Odanah, Crete, Cyprus, Adriatic, Verona, Jay C. Morse, J. J. Sullivan, Elba, Queen City, C. W. Kotcher and B. F. Berry.

Mr. Clemente will visit a number of shipyards on the great lakes in the interest of Sawdolet in the near future.

MUTUAL TRANSIT CO.

Following masters have been appointed to command the steamers of the Mutual Transit Co. for the season of 1908:

STEAMER.	CAPTAIN.
North Wind,	E. B. Blair.
North Star,	George Hayward.
Northern King,	F. C. Leath.
Northern Queen,	W. H. Stevenson.
Northern Wave,	D. L. Cartwright.
Northern Light	S. B. Worden.
Minneapolis.	Walter Robinson.
St. Paul,	Peter Thompson.
Huron,	Neil Anderson.
W. C. Rhoades,	George B. Crawford.

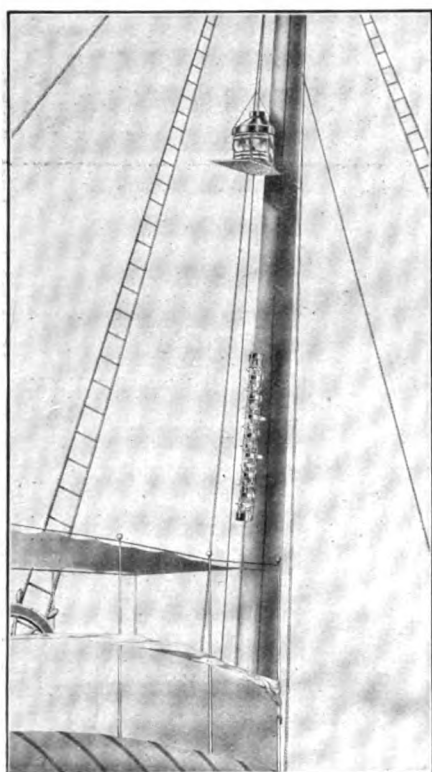
UNION STEAMBOAT LINE.

Following masters have been appointed to command the steamers of the Union Steamboat line during the season of 1908:

STEAMER.	CAPTAIN.
Starrucca,	John C. Clarks.
Ramapo,	J. A. McDonald.
Owego,	George W. Moore.
Chemung,	F. R. Gebhard.
Tioga,	C. W. Watson.
Binghamton,	Thomas Stevenson.

The Gilchrist Transportation Co. has sold the wooden steamer D. C. Whitney to Ganley Bros. of the Canadian Sault. The Whitney is 229 ft. long, 40 ft. beam and was built at St. Clair in 1882.

ALL GRADUATES OF THE "NEW York Nautical School St. Mary's" will learn something of interest by addressing Louis Weickum, Sec'y, Foot East 24th St., New York City.



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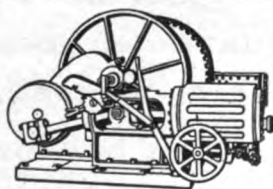
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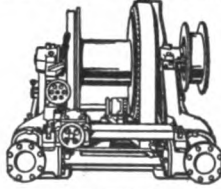
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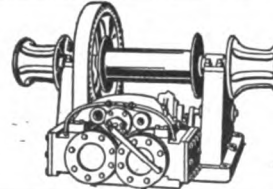
Admiral Anchor Co.....	9	Donnelly Salvage & Wrecking Co.	45	Kahnweiler's Sons, David.....	45	Red Star Line.....	51
Almy Water Tube Boiler Co..	37	Douglas, G. L., Jr.....	48	Katzenstein, L., & Co.....	51	Richardson, W. C.....	48
American Injector Co.....	3	Dreine, Thos., & Son.....	45	Kidd, Joseph	49	*Ritchie, E. S., & Sons.....	—
American Line	51	Dunbar & Sullivan Dredging Co.	39	Kingsford Foundry & Machine Works	37	Roberts Safety Water-Tube Boiler Co.	37
American Ship Building Co..	4			Kremer, C. E.....	48	Roelker, H. B.....	45
American Ship Windlass Co.	2					†Rogers Steam Oil Separator Co.	—
Armstrong Cork Co.....	52			*Le Mois Scientifique et Industriel	43	Root, W. O.....	49
†Ashton Valve Co.....	11	Elphicke, C. W., & Co.....	48	Lockwood Mfg. Co.....	45	Ross Valve Co.....	50
Atlantic Mutual Insurance Co.	—	†Empire Ship Building Co..	—	Lorain Coal & Dock Co.....	49		
Atlantic Works	50			Lundin, A. P.....	52	Safety Car Heating & Lighting Co.	9
						Scherzer Rolling Lift Bridge Co.	43
Babcock & Penton	35, 49	Falls Hollow Staybolt Co.....	50	McCarthy, T. R.....	48	Schrader's, A., Son, Inc.....	45
Baker, Howard H., & Co....	52	Fix's, S., Sons.....	50	McCurdy, Geo. L.....	35	†Seneca Chain Co.....	—
Belcher, Fred P.....	48	Fletcher, W. & A., Co.....	50	McKinnon Iron Works.....	50	Sharpley Marine Railway.....	45
Boland & Cornelius.....	48	Fogg, M. W.....	45	MacDonald, Ray G.....	48	Shaw, Warren, Cady & Oakes	48
*Boston & Lockport Block Co.	—	Fore River Ship Building Co..	50	Manistee Iron Works Co.....	37	*Shelby Steel Tube Co.....	43
†Boucher Mfg. Co., The H. E.	—	Furstenau, M. C.....	49	*Marine Iron Co.....	—	Sheriffs Mfg. Co.....	43
Bowers, L. M., & Co.....	43			†Marine Iron Works	—	Shipping World Year Book...	51
Breymann, G. H., & Bros....	39	General Electric Co.....	52	Marshall, Alexander	48	Siggers & Siggers.....	45
Briggs, Marvin	38	Gilchrist, Albert J.....	48	Martin-Barriss Co.....	43	Smith Coal & Dock Co., Stanley B.	41
Brown & Co.....	48	†Goldschmidt Thermit Co..	—	Maryland Steel Co.....	10	Smooth-On Mfg. Co.....	51
†Brown Hoisting Machinery Co.	—	Goulder, Holding & Masten..	49	Mehl, Edward	48	Speddy, Joseph H.....	48
Buffalo Dredging Co.....	39	Great Lakes Dredge & Dock Co.	39	Milwaukee Dry Dock Co....	5	†Spence Mfg. Co.....	—
Buffalo Dry Dock Co.....	5			Mitchell & Co.....	48	Standard Varnish Works.....	35
†Buffalo Ship Chandlery & Supply Co.	—	Great Lakes Engineering Wks.	12	Morse, A. J., & Son.....	45	Starke, C. H., Dredge & Dock Co.	39
Bunker, E. A.....	45	Great Lakes Register.....	9	Nacey & Hynd.....	49	Stratford, Geo., Oakum Co....	43
		*Great Lakes Towing Co....	—	National Cork Co.....	45	Submarine Signal Co.....	9
		†Griscom-Spencer Co.	—	†New Bedford Boiler & Machine Co.	—	Sullivan, M.....	39
Chase Machine Co.....	36					Sullivan, D.....	48
Chicago Ship Building Co....	4	Hall, John B.....	48			†Superior Iron Works.....	—
Clemente, C.....	38	Hanna, M. A., & Co.....	41			Superior Ship Building Co....	4
Cleveland City Forge & Iron Co.	50	Hardy Paint & Varnish Co..	—	Newport News Ship Building & Dry Dock Co.....	6		
*Collingwood Ship Building Co	—	Hawgood, W. A., & Co.....	48	New York Mallet Handle Wks.	49	Tietjen & Lang Dry Dock Co.	50
†Columbian Rope Co.....	—	Helm, D. T., & Co.....	48	New York Ship Building Co..	7	*Toledo Fuel Co.....	—
Continental Iron Works.....	2	Holmes, Samuel	48	†Nicholson Ship Log Co....	—	Toledo Ship Building Co....	5
Copeland Co., E. T.....	51	Hoyt, Dustin & Kelley.....	48	Northern Dredge Co.....	39	Trout, H. G.....	43
Cory, Chas., & Son.....	50	Hunt, Robert W., & Co.....	49	Northwestern Steam Boiler & Mfg. Co.	37	Truscott Boat Mfg. Co.....	2
Cramp, Wm., & Sons S. & E. B. Co.	8	Hutchinson & Co.....	48	O'Connor, J. J.....	48		
†Crescent Machine Co.....	—	Hyde Windlass Co.....	52	Otis Steel Co.....	41	Upson-Walton Co.	35
Curr, Robert	49					Under-Feed Stoker Co. of America	1
		†Ideal Pump Governor Co....	—	Parker Bros. Co.....	48	Unique Engineering Co.....	2
Dake Engine Co.....	3	International Mercantile Marine Co.	51	Penberthy Injector Co.....	52	†United States Graphite Co..	—
Dearborn Drug & Chemical Works	3			Pickands, Mather & Co.....	41	Vance & Joys Co.....	48
Delany, P., & Co.....	37	Jenkins Bros.	52	Pittsburg Coal Co.....	41		
Detroit Ship Building Co....	4	Jenkins, Russell & Eichelberger	48	Prindiville & Company.....	49	Walker, Thomas, & Son.....	3
Dixon, Joseph, Crucible Co..	43	Johnson Bros.	37	Quintard Iron Works Co....	50	Wilby, Carlton	—
						*Watson-Stillman Co	—
						†Wheeler Condenser & Engineering Co.	—
						Willcox, Peck & Hughes....	38
						Wood, W. J.....	49



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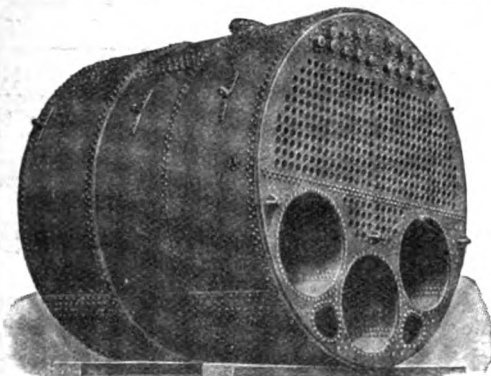
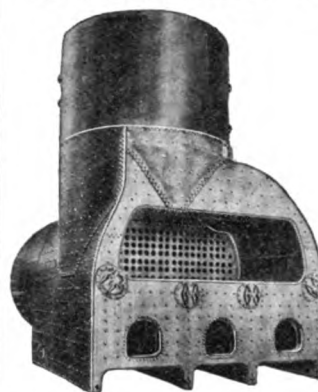


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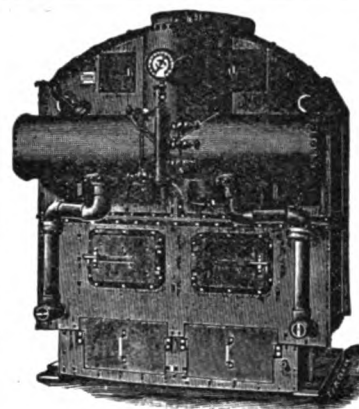
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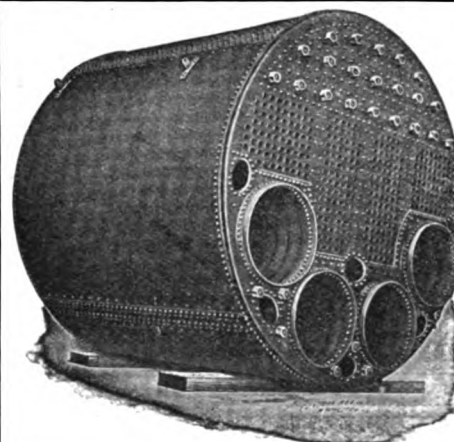
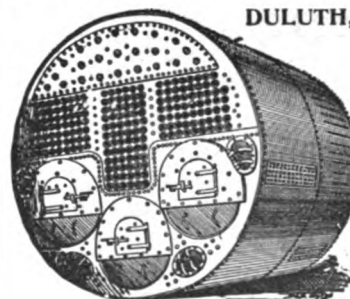
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J. H. OPPERMANN, Secretary, 579-R; E. KRIZ, Superintendent, 557-M.**

CLASSIFIED ADVERTISING SERVICE

PROPOSALS.

PROPOSALS.—Sale of U. S. vessels *Pinta* and *Canonicus*.—Sealed proposals will be received at the Navy Department until noon on the 19th day of February, 1908, at which time and place they will be opened, for the purchase of the U. S. vessels *Pinta* and *Canonicus*, appraised values, \$1,400 and \$6,000, respectively. They will be sold for cash to the person or persons or to the corporation or corporations offering the highest price therefor. A separate proposal for each vessel bid upon must be submitted in a sealed envelope addressed to the Secretary of the Navy, Washington, D. C., endorsed "Proposals for the purchase of the U. S. S. —" (naming the vessel for which offer is made), and each proposal must be accompanied by a satisfactory certified check for not less than 10 per cent of the amount of the offer. On application to the Navy Department, forms of bids and bonds, together with the terms and conditions of sale, also a printed list giving general information concerning these vessels, will be furnished. The vessels can be examined at any time after this date by applying to the Commandants of the navy yards, Mare Island, Cal., and Norfolk, Va., respectively, where they now lie. They must be removed from the limits of said yards within such reasonable time as may be fixed by the department. The Department reserves the right to withdraw either or both of the above-named vessels from sale and to reject any or all bids. **TRUMAN H. NEWBERRY**, Assistant Secretary of the Navy. January 11, 1908.

U. S. Engineer Office, Milwaukee, Wis., January 24, 1908. Sealed proposals for building reinforced concrete caisson breakwater, pile pier, and plank cribs, removing old pier, and dredging, at Algoma Harbor, Wis., will be received here until 2 p. m., February 24, 1908, and then publicly opened. Information furnished on application. **W. V. Judson**, Major, Engrs.

U. S. Engineer Office, Jones building, Detroit, Mich., Feb. 4, 1908. Sealed proposals for widening St. Mary's Falls Canal will be received at this office until 3 P. M., March 5, 1908, and then publicly opened. Information furnished on application. **Chas. E. L. B. Davis**, Col. Engrs.

U. S. Engineer Office, 57 Park street, Grand Rapids, Mich., Feb. 4, 1908. Sealed proposals for repair of South Pier at Charlevoix Harbor, Mich., will be received here until 3 P. M., March 5, 1908, and then publicly opened. Information furnished on application. **M. B. Adams**, Col. Engrs.

Sealed proposals for dredging the Cuyahoga River, Old Bed and Sycamore St. Slip, will be received by the Board of Public Service, No. 105 City Hall, Cleveland, O., until 12 o'clock noon, Feb. 20, 1908. The amount of work to be done involves an expenditure of about \$58,000.

POSITION WANTED

POSITION WANTED BY AN EXPERIENCED loftsmen, who understands laying down wood and steel ships, and the universal templet system as used by lake ship yards. Address Box 127, the **MARINE REVIEW**, Cleveland, Ohio.

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